We agree,

SPECIALTY SERVICE CORPORATION,

it's far easier to *sell* GRUNOW, than to sell *against* it!

SPECIALTY SERVICE CORPORATION

"SERVICE IS OUR MIDDLE NAME"
ESTABLISHED 1918

EXECUTIVE OFFICES:
651-653 ATLANTIC AVE., B'KLYN, N. Y.
Telephone: STerling 3-7800
Branches In All Boroughs

March 19, 1936

Mr. H. J. Shartle
General Sales Manager
General Household Utilities Co.
2638 North Crawford Avenue
Chicago, Illinois

Dear Mr. Shartle:

Here I am back in my office after my trip to the factory, happy and enthusiastic that I will work with you as distributor for Grunow products in the entire Metropolitan area.

While going thru your plant, I was pleased to see so many men of the good Majestic days who I know are specialists in such important fields as engineering, manufacturing and merchandising. It was a real pleasure to see Bill Grunow again, and seeing him in such an enthusiastic frame of mind, I know that our association will result in profits for our dealers and ourselves. More dealers admit that over a period of time they have made most money on products built and promoted by Bill Grunow, and I feel that we will now again enable our dealers to cash in under his leadership.

It happened I went thru your factory last Saturday afternoon, and there it was working full speed, producing beautiful, efficient refrigerators. The new unit is so silent in operation that it is hardly believable, and with the safe low pressure refrigerant Carrene, you have a product that will be easier for the dealer to sell than to try to compete with.

I took much time to closely examine the new Grunow Radios, and I am convinced that the beauty, tone, performance and mechanical features are unsurpassed.

I know the dealers in our territory will be pleased to hear that your Company is now completely re-organized and is in an excellent financial position.

With best wishes, and assuring you of our constant cooperation, I am

Sincerely yours,
Julien Loeb
President
Specialty Service Corp.

JL•FL

Yes, Mr. Loeb, you are right!

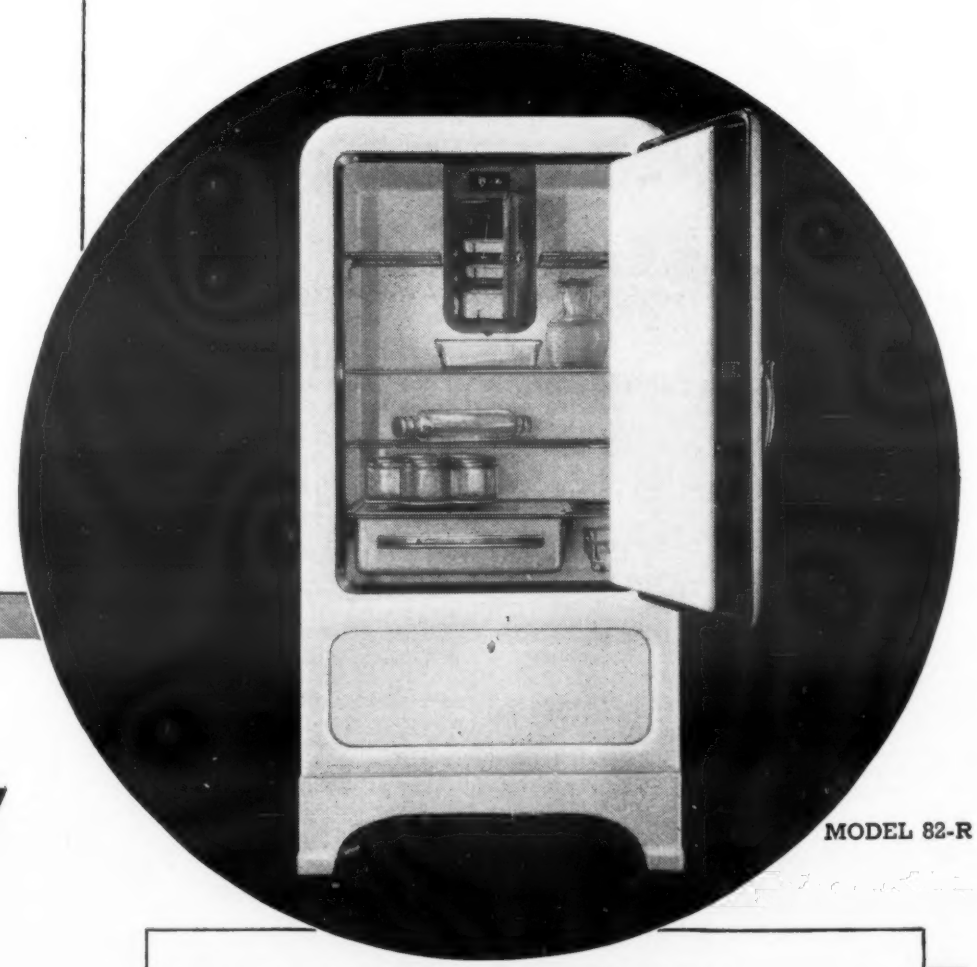
There's a reason for this. Grunow pioneered in the three major refrigerator advancements. Grunow was first with safe refrigeration. Today the words "Super-safe Carrene" provide one of the most powerful selling phrases known.

Grunow pioneered the modern streamline cabinet, and made style a vital factor in refrigerator design. Grunow pioneered the low-pressure vacuum principle making possible the first simplified electric refrigerator.

This leadership has placed Grunow ahead of competition and made it easier to sell. It will continue to make the Grunow franchise profitable, not only to you, but to Grunow distributors and dealers everywhere! Write us for franchise information. Attractive discounts. Big money making possibilities.

GENERAL HOUSEHOLD UTILITIES COMPANY
CHICAGO, ILL.

Manufacturers of Grunow Household Radios—Grunow Super-safe Carrene Refrigerators—Grunow Automobile Radios.



MODEL 82-R

Grunow
WITH SUPER-SAFE CARRENE

Don't delay! Fill out and mail coupon to the right, now. It is to your advantage to find out about the money-making possibilities of the Grunow franchise as soon as possible.

GENERAL HOUSEHOLD UTILITIES COMPANY
Dept. 28910, Chicago, Ill.

I am interested in the big money-making possibilities in the Grunow dealer franchise. Please send me full information about

☐ Refrigeration Franchise ☐ Radio Franchise

Name.....

Street Address.....

City..... *State*.....

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

WRITTEN TO BE READ ON ARRIVAL

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS.

VOL. 17, NO. 18, SERIAL NO. 371
ISSUED EVERY WEDNESDAY

Entered as second-class matter Aug. 1, 1927

DETROIT, MICHIGAN, APRIL 29, 1936

Copyright, 1936, by Business News Pub. Co.

THREE DOLLARS PER YEAR
TEN CENTS PER COPY

Air Conditioner Orders Up 13% During February

Air Conditioning, Blower & Unit Heater Orders Total $2,611,241 for Month

WASHINGTON, D. C.—Value of orders for air conditioning, blower fans, and unit heaters during the month of February amounted to $2,611,241, a gain of nearly 13% over the value of orders booked during January, according to reports made by 98 manufacturers and released through the office of Director William L. Austin, U. S. Bureau of the Census.

This is the first year that information on air-conditioning orders (particularly on systems providing cooling) has been collected by an agency of the Federal government.

In the air-conditioning group—which includes self-contained units, systems shipped in sections including a cooling medium, central-station systems, refrigerating equipment for air-conditioning systems, air washers, air filters, and humidifiers—the value of orders booked in February was $1,111,586, a substantial gain over the $950,958 dollar volume of orders reported for such equipment in January.

Biggest gain shown among the various divisions of the air-conditioning group was on self-contained conditioners, the $76,582 February orders more than doubling the value of orders for similar equipment in January.

A large increase was also shown in central-station systems for human comfort, with orders of $569,122 being nearly double the January figure.

Slight decreases were shown in the totals for industrial systems; and for refrigerating equipment sold to contractors or other distributing outlets for use with air-conditioning systems.

Orders in the fan group during February amounted to $783,573, as compared to a January volume of $648,931.

A complete tabulation of February air-conditioning orders will be found on page 11 of this issue.

REA Says Dealers Need Not Fear Cooperatives

WASHINGTON, D. C.—Appliance and wiring dealers need not fear competition of electric service cooperatives in rural areas merchandising if they take advantage of the great volume of business offered, Administrator Morris L. Cooke of the

(*Concluded on Page 2, Column 5*)

18,113 Leonards Are Shipped In March

DETROIT—A total of 18,113 electric refrigerators was shipped by Leonard Refrigerator Co. during March of this year, representing a 153% increase over the 7,166 units shipped during March, 1935, reports Salesmanager R. I. Petrie.

For the six-month period ending March 31, 1936, shipments of Leonard refrigerators totaled 33,952, an increase of 69% over the 20,149 shipped in the six months ending March 31, 1935, Mr. Petrie said.

44,171 Units Goal of Utility Campaign

NEW YORK CITY—With the sale of 44,171 mechanical refrigerators as an objective, the Refrigeration Jubilee—spring selling activity of the Associated Gas & Electric System and its properties—will begin May 11 and continue to June 30.

"Sell with McSaver for more net," is the slogan of the campaign which borrows its central idea from the historical accounts of the famed skill-and-strength testing matches which Scottish clans once held in the Caledonian hills. For the 43-day sales drive, each operating company will be considered as a clan. Group managers will be clan chieftains and the selling crews, clan members.

Sales concentration is to be centered on the lower and medium income prospect group. Features designed to capture the buying interest of this group include the offer of special contest payment terms, and use of the meter selling plans.

For the duration of the Jubilee drive, lacquer finish electric and gas refrigerators of less than 5-cu. ft. capacity will be sold on the following terms: $2 down payment, 48 months to pay, and ½ of 1% carrying charge.

Boxes exceeding 5 cu. ft. capacities—both electric and gas—may be sold on the basis of $2 down, 36 months to pay, plus a carrying charge of ½ of 1%.

Sale of 44,171 units during this Jubilee will mean an increase over the record of the 1935 spring refrigeration drive in which operating companies sold 31,211 units.

To provide a method for determining progress made during the selling Jubilee, the event has been termed a service building drive—in which each sale will be considered as the acquisition of a new customer, requiring the installation of a company service line. Service installation maps will be used to chart each clan's sales.

(*Concluded on Page 2, Column 3*)

FTC Complaint Issued Against Coolerator Co.

Federal Trade Commission Charges Statements in Booklet Are Unfair

WASHINGTON, D. C.—Federal Trade Commission on April 22 made public a complaint against the Coolerator Co., Duluth manufacturer of ice refrigerators, charging that representations made by the Coolerator Co. in disparagement of competitor's products constitute unfair competition.

The Coolerator Co. is alleged to have made certain representations having a tendency to deceive buyers into the false belief that electric refrigerators are undependable, ineffective, and harmful.

The Federal Trade Commission has set Friday, May 22, as the final date on which the respondent may show cause why an order to cease and desist from the practices complained of should not be issued.

According to the complaint, the Coolerator Co. distributed a booklet called "Why Ice Is Best for Refrigeration" in which it was suggested that various gases used in electric refrigerators escape from the coils, permeate the food chamber, and have a deleterious effect on food; that foods kept in electric refrigerators dehydrate to such an extent that the nutritive properties are impaired, and other similar assertions.

In its booklet, the respondent is alleged to have reported or suggested that it is possible only with natural or artificial ice to produce the proper temperature control of foods without disturbing the natural composition of the air or food in the refrigerator; that foods kept in non-mechanical refrigerators using natural or artificial ice do not dehydrate, and that in such refrigerators any poisonous gases formed from decay of foods are entirely absorbed by the water from the melting ice and carried away through the drain pipe, and other representations.

Philadelphia Bureau To Sponsor Campaign On Air Conditioning

PHILADELPHIA—Four Philadelphia papers are carrying a series of institutional advertisements on air conditioning being issued during April and May under the sponsorship of the air-conditioning division of the Electrical Association of Philadelphia, with the support of the Philadelphia Electric Co., reports George R. Conover, managing director of the association.

Twenty-eight insertions will be distributed among the *Inquirer, Bulletin, Public Ledger,* and *Record* to cover an eight-week period.

Four-fold purpose of the campaign, as described by Mr. Conover, is: (1) To promote general interest in air conditioning as a subject of conversation. (2) To correct, in a measure, the public's wrong concept of what air conditioning really is. (3) To reach the heads of establishments who are, or should be, thinking about air conditioning and to direct that thought to a realization that each installation is an individual engineering job. (4) To induce this latter class to send for the new booklet which describes air conditioning and gives the latest list of installations.

In each of the advertisements, air conditioning is defined as "the science of controlling the temperature, moisture, cleanliness, and motion of the air within an enclosure."

Eye-catching illustrations call readers' attention to such messages as: "Air Conditioning Is Making New Business Trails."

Pictures of air-conditioning flags acting as guides for Mrs. Green's shopping tour pictorialize the copy, which reads: "It's remarkable how quickly the discerning shopper learns to choose the 'air-conditioned path'—she thoroughly enjoys perfect indoor weather which is maintained regard-

(*Concluded on Page 15, Column 5*)

ONLY LICENSED CONTRACTORS MAY OPERATE IN DETROIT

DETROIT—The Common Council of the City of Detroit has passed an ordinance requiring that all persons engaged in the inspection, regulation, and operation of ice making, cooling, and multiple refrigeration plants be licensed and post a bond of $1,000.

The ordinance, which first came before the Council at its Jan. 7 meeting, is designed to raise the standards of refrigeration contracting and service work in the city. It had the backing of the local chapter of Refrigeration Service Engineers Society and of Detroit Refrigeration Contractors, Inc.

In addition to paying the standard fee and posting the $1,000 bond, applicants for licenses are also required to show three years' experience in refrigeration installation and service work, either on their own part or on the part of persons employed by them. At least one person in every licensed shop must have this experience.

Fees for licenses for firms and corporations engaged in the installing and servicing of refrigeration systems have been established by the Board of Rules of the Department of Building and Safety Engineering as follows:

Licenses issued between Jan. 1 and Aug. 31, 1936 (original issue), $25; licenses issued between Sept. 1, and Dec. 31, $12.50; yearly renewal fee, if issued before March 1 of the following year, $10.

If the license is not renewed within

(*Concluded on Page 16, Column 3*)

Buffalo Show Nets 512 Refrigerator Sales; 3,300 Prospects

BUFFALO — Approximately 3,300 prospects were obtained and 512 refrigerators sold at the sixth annual Electric Refrigeration Show conducted by the Electrical League of the Niagara Frontier the first week in April at the Electric Building here, reports Samuel S. Vineberg, manager-secretary of the league, and manager of the show.

Estimated attendance figures of 52,568 people exceeded any other year's by 50%, declares Mr. Vineberg. To accomplish this attendance record 265,000 free tickets were distributed with light bills calling attention to the six refrigerators to be given away at the show. Other tickets were made available to dealers to be distributed

(*Concluded on Page 2, Column 5*)

Detroit Service Men Celebrate New Ordinance

City Officials Attend Big Banquet of Refrigeration Contractors Association

DETROIT—Oratory and cheers, songs and stories followed a good dinner at Webster Hall last Thursday night, April 23, at which Detroit refrigeration contractors celebrated the success of their campaign for an ordinance to protect their businesses from the activities of fly-by-nights and to protect the public from irresponsible and inexperienced operators.

J. E. Perry, president of the Contractors Association, expressed the opinion that the new law would provide the basis for further constructive work by the organization and a clean development of the service business in the public interest.

City officials attended the meeting and congratulated the contractors. They also expressed the hope that other refrigeration interests will cooperate equally well, at some time in the near future, to revise the remaining sections of the practically-obsolete refrigeration code.

Joseph P. Wolff, public safety commissioner, called attention to the fact that Detroit now has in effect the most modern building code of any large U. S. city and said that his department is now ready and willing to go to work on a model refrigeration and air-conditioning code.

City officials who attended the banquet included: Joseph P. Wolff, commissioner, Department of Buildings and Safety Engineering; Halsted Mills, chief inspector, Bureau of Safety Engineering; Ben Clark, chief inspector, Electrical Bureau; Leo Gage and Julian Holman, inspectors, Refrigeration Division, Bureau of Safety Engineering.

Among other non-members present were: Philip Neudeck, attorney who drafted the ordinance; C. Bryant Huff, who was master of ceremonies; Frank J. Gleason, executive secretary of the National Refrigeration Supply Jobbers Association; George H. Clark, president of the Detroit School of Refrigeration; Irving Knudsen of Detroit Lubricator Co.; and F. M. Cockrell, publisher of the NEWS.

Detroit refrigeration contractors who were present or represented at the banquet included:

William G. Euth; John J. Grenat, A.B.C. Auto Electric Service; J. Gest; E. C. McKerracher, Redford Refrigeration; Jack Mercier, Square Deal Co.; Wilkie Refrigeration Co.; A.B.C. Refrigeration; Leo J. Murphy, Leo Mur-

(*Concluded on Page 16, Column 4*)

Refrigeration Curve Will Not Level Off Because of Market Saturation, Allison Tells Cleveland Group

By T. T. Quinn

CLEVELAND, April 27—Two hundred and fifty refrigeration dealers and salesmen of the greater Cleveland area, at the inaugural of a series of five breakfast meetings sponsored by the Electrical League of Cleveland, today heard Dr. George W. Allison, field director of the Kitchen Modernization Bureau, forecast that there will be no leveling off in the refrigeration sales curve, even if saturation went as high as 75%, "if we keep on selling the idea of refrigeration—and not bolts, or nuts, or gadgets."

"I do not agree with some trade paper editors," Dr. Allison said, "who predict that, when the refrigeration saturation point hits 60 or 62%, the sales curve will level off, in spite of everything we can do.

"We have not hit the peak year in refrigeration sales as yet—won't hit it, in my opinion, for a number of years.

"Refrigeration fills a definite need in the home today—a need which the public in general, and the housewife in particular, is becoming more and more conscious of all the time.

"Our best year in the electric refrigeration industry is still to come—we haven't even approached our peak as yet. Sales are going up, and they will continue to go up, if we remember to keep selling the housewife the idea of refrigeration—and not features, or bolts, or nuts, or compressors, or gadgets."

More perishable foods are being sold today than ever before—sufficient evidence, in itself, that refrigeration today is an ever-present need in most homes, Dr. Allison said. This kind of foodstuffs, he added, requires refrigeration more than any other sort; it can't keep without refrigeration.

The most important thing for salesmen to remember, said Dr. Allison, is to keep on the main line in refrigeration selling—the fact that a refrigerator's prime purpose, and sole reason for existence as a household utility, is the fact that it keeps foods, at proper temperature, longer and more safely than any other method.

He cited the Kitchen Modernizing Program as the newest example of what a national activity can do to influence sales in individual communities.

"A national activity," he stated, "can sell only ideas—not features or gadgets. The present cooperative program is designed to sell an idea—the idea of the all-electric kitchen, either wholly, or piece by piece."

Examples of what cooperative

(*Concluded on Page 2, Column 1*)

FEATURES OF THIS ISSUE

Chicago Code

Proposed new refrigeration code for Chicago. Complete text on pages 12, 13, and 14.

Detroit Ordinance

New licensing ordinance adopted in Detroit as sponsored by Detroit Refrigeration Contractors, Inc. Page 16. See news story above.

Patent Decision

Complete text of U. S. Court decision declaring invalid the Auditorium By-Pass Patents on air conditioning. Page 15.

NEXT WEEK

Commercial Specifications

Specifications of all models of all makes of commercial refrigeration machines, together with specifications of all types of *self-contained* commercial refrigerator equipment (such as display cases, ice cream cabinets, beverage coolers, etc.) will be published in the May 6 issue of ELECTRIC REFRIGERATION NEWS.

The data on the commercial refrigerating machines will include the rated capacity of the units in B.t.u.'s per hour under the conditions specified in the new method of rating commercial condensing units approved last year by the Refrigeration Division of National Electrical Manufacturers Association, American Society of Refrigerating Engineers, and the Refrigerating Machinery Association.

Information on self-contained commercial refrigerator equipment marks a new step forward in the efforts of ELECTRIC REFRIGERATION NEWS to give its readers complete specifications service, as full information on this type has not been published before in the NEWS.

Warranties and 5-Year Plans

Also to be published in the May 6 issue is a tabulation of the warranties and "5-year service plans" now being offered by manufacturers of household electric refrigerators.

The exact text of these warranties on household electric refrigerators will be published for makes on which such warranties are specified.

Extra copies of the May 6 issue containing commercial refrigeration specifications and a tabulation of household refrigerator warranties, will be available to those who send in their orders early. The price is *25 cents per copy* for any quantity.

'Ensemble' Selling Needed in Appliance Field to Equip American Homes with Electric Kitchens, Says Allison

(*Concluded from Page 1, Column 2*)

activities have done to sell an idea, he said, are the Electric Refrigeration Bureau, established in 1931 and now out of existence, and the Better Light-Better Sight program, which kept lamp factories so busy (in the midst of the depression) that many of them were working 24 hours a day in an effort to catch up with unfilled orders.

When the Electric Refrigeration Bureau was formed, Dr. Allison said, someone suggested the slogan "A million electric refrigerators in 1931." This was adopted, he added, with a tongue-in-cheek attitude by some manufacturers—but when the smoke of the year's refrigeration battle had cleared, it was found that sales had reached 950,000—only 50,000 short of the coveted goal. Without the mark to shoot at, he stated, sales would not have reached nearly so high a level.

Campaign Beats Depression

The same, he said, has been true of the Better Light-Better Sight movement, which was started at an even less auspicious time. Results from this activity were so unexpected, he added, that several plants were swamped with orders, ran their plants 24 hours a day in a futile effort to catch up, and finally had to call in their salesmen, to give them a chance to meet this altogether unprecedented demand, which seemed to have appeared suddenly from out of nowhere.

Returning to the Nema-E. E. I. activity, Dr. Allison said it is particularly opportune at the present time.

"Things throughout the country are not nearly so bad as they are made to seem," he said.

"Some wag has called this the best publicized depression in the history of the world, and it's just about true. The danger is that if it keeps up much longer people will begin to believe it—and then we really will be in for a period.

"The United States," Dr. Allison added, "still has more purchasing power than the whole of Europe, and half of the world's wealth. Never before has there been so much money on deposit in the nation's banks—just waiting for something to be invested in."

Factors for Prosperity

Three factors, he said, are required to bring on an era of prosperity. These are:

1. A demand or need for goods.
2. Money to buy raw materials, and turn them into the goods needed.
3. Man power.

All of these factors, he said, are present in abundance in this country today. For prosperity, all that is needed is to put the three to work, together.

Another factor in favor of the electric kitchen activity, he added, is the building boom, evidences of which are apparent on almost every hand. Almost every town has either its model home or its remodeled home—and people are flocking to it in droves, motivated by the desire to have one just like it for themselves.

National magazines and newspapers, Dr. Allison said, are devoting millions of dollars worth of space to news of home building activity and advertising of model homes.

"I believe," he said, "that already public interest in home building is far ahead of our ability to meet it."

The new note in salesmanship today, Dr. Allison added, is ensemble selling—in appliance selling, as well as in other lines.

"Women like ensembles," he said. "When a woman goes into a store to buy a new dress, they start showing her ensembles, and pretty soon she decides she needs a whole new outfit. And what man hasn't bought the little woman a new chair for the living room, and then had to change the fittings of the whole room to match it?

Sell Complete Kitchen

"Ensemble selling demands a higher type of salesmanship than merely selling appliances. You've got to sell to the picture that's in the back of the housewife's mind—the picture of a complete kitchen.

"Many a woman who refuses to buy an electric refrigerator she obviously needs is doing so because she knows that, as soon as she sets that bright new piece of equipment in her kitchen, the place is going to look more dingy than before, and she's going to be more dissatisfied than ever.

"For women today are thinking in terms of a room—a kitchen, not a piece of equipment. The salesman, if he hopes to overcome her objections, must fit in his sales story with the picture that is in her mind—this kitchen picture.

"If he can, he will sell the kitchen as a unit—refrigerator, range, dishwasher, sink, lighting—the whole job. If he can't, he must sell the kitchen piece by piece.

Selling Standard of Living

"You salesmen are no longer selling merely appliances — refrigerators, ranges, dishwashers—you're selling the idea of comfort, of higher standards of living, of labor-saving devices—life-saving devices, if you please.

"That's one reason why selling modern home appliances, today, requires a higher type of salesmanship than ever before."

J. E. North, president of the League, presided at the meeting. He outlined some of the League's promotion plans for the year, and asked dealer cooperation in making the year's program successful.

An indication of the confidence of Cuyahoga County distributors in what 1936 will bring in refrigeration, he said, is shown by the quota which was set at the beginning of the year—31,750 units in the territory for 1936, compared with last year's sales of 24,383 units.

A Governor Gets a Demonstration

Gov. A. B. "Happy" Chandler of Kentucky (right) learns how to use the Sav-a-Step feature of the 1936 Stewart-Warner refrigerator from W. W. Thornsberry, president of the Gas & Electric Shop, Louisville S-W dealer.

Associated System Offers Low Terms On Small Units

(*Concluded from Page 1, Column 2*)

The President's Trophy, grand prize offered in connection with the annual event, will be given to clans in each of the System's divisions which attain the highest percentage of quota for company and dealer sales during the six-month period ending June 30.

Under a special compensation plan to be effective during the Jubilee, salesmen are offered the following bonuses: $2 for obtaining a cash sale; $1 for obtaining a reduction of payment terms to 12 months when the contract allows 18 months or more; $1 for obtaining a $25 down payment where terms stipulate a smaller fee; and a $2 bonus for securing a $50 payment when terms call for less.

Other prizes for salesmen include electric refrigerators of the following makes: Frigidaire, General Electric, Kelvinator, Westinghouse, and Electrolux, which are given by officials of each of the manufacturing companies. These prizes will be awarded to the men turning in the highest dollar volume of retail sales on each of the respective makes during the Jubilee.

In addition to these, each selling group participating in the event will offer special awards to its selling crew in accordance with suggested lists included in the contest outline which the management of the Associated Gas & Electric System sent to each of its properties.

To make the activity an all-around success, the competing sales organizations are urged to secure dealer cooperation, tie-in with manufacturers' national advertising campaigns, run special newspaper advertising spreads, use motion window displays, and secure the aid of all company employees by offering bonuses to the employee who turns in the greatest number of prospect names.

20 Dealers Exhibit in Refrigeration Show Of Detroit News

DETROIT—Twenty electric refrigerator dealers are cooperating with the *Detroit News* in staging the First Annual *Detroit News* Refrigeration Show, to be held in the Masonic Temple auditorium here during the four days from April 30 to May 3, inclusive.

The show, first of its kind to be held in Detroit, is a cooperative affair, with the newspaper handling all arrangements.

Dealers pay for their space in the exposition with a quarter-page ad in the *News,* which covers all expenses for them.

The exposition is timed to attract the attention of prospects when their interest in buying an electric refrigerator is at its height. Only refrigerators may be displayed at the show, exhibitors agreeing to bar all other appliances, even to the extent to prohibiting the passing out of literature regarding them.

Participation in the show is also limited to retailers only; distributors may not take space in the exhibit unless they have a retail operation. Space in the show was apportioned by lot, to give all participants an equal chance to obtain the most favorable locations.

Attendance at the show is expected to be heavy. The newspaper has been giving the event wide publicity in its news columns, and 180,000 folders, describing the event, were sent out Monday to all non-owners of electric refrigerators in the city.

During the course of the show, the *Detroit News* will move its radio station, WWJ, to the Masonic auditorium, and will broadcast frequent programs from that point. Local entertainers over the station will also be present.

The show will run from 10 a. m. to 10 p. m. on the four days. Admission is free.

512 Sales Closed at Buffalo Dealers' Annual Exhibit

(*Concluded from Page 1, Column 4*)

to their customers. Suitable window banners were also furnished by the dealers, calling attention to the free refrigerators.

Newspaper space, radio broadcasting, and bumper signs were used during the week of the show to publicize the event.

A carnival-like atmosphere formed the background for displays of the twelve refrigerators represented.

The companies participating included: Kelvinator, Kelvinator Sales Corp.; Westinghouse, McCarthy Bros. & Ford; Crosley, Ontario Electric Co.; Norge, W. Bergman Co.; Leonard, Jos. Strauss Co.; Frigidaire, Frigidaire Corp.; Apex, Apex-Rotarex; Stewart-Warner, Buffalo Nipple & Machine Co.; Potter, A. R. Weber, Inc.; General Electric, Frank W. Wolf, Inc.; Hotpoint, General Electric Supply Corp.; Grunow, General Household Utilities.

W. E. Henning, chairman of the electric refrigeration division, directed the show, assisted by J. R. Andrews, J. A. Apsey, Ernest Kronson, Sol Levy, George J. Reichert, William Hensel, and Samuel Moses, floor supervisor.

Cooke Explains Views Of REA on Sales of Appliances

(*Concluded from Page 1, Column 1*)

Rural Electrification Administration told G. M. Haskell, chairman of the Rural Electrification Committee of Nema, in a recent letter.

A statement of REA policy came in answer to a growing number of inquiries concerning the attitude that the administration would adopt toward merchandising, especially by electric service cooperatives.

REA, Mr. Cooke says, has attempted to discourage the practice of compelling the consumer to purchase his appliances from the project sponsor as a condition of obtaining electric service.

Although for the economy to be gained by group installations and in the interest of good administration, REA will lend funds to project sponsors for reloaning to consumers to finance wiring installations, it strongly favors the installations being made by recognized electrical contractors on the basis of competitive bidding, he said.

Mr. Cooke added, however, that cooperatives will undoubtedly exercise their right to participate in the new era of expansion which is opening up in the appliance and wiring fields. The merchandising policies of sponsors of rural distribution lines, he said, are primarily local and state matters.

Loans to home owners who wish to pay for their house wiring on a monthly basis will not be financed directly through REA. It is quite likely, Mr. Cooke said, that loans for such house wiring will be made to the project sponsors, they, in turn, making the loan to the individual.

"Even in such cases, however, we would disapprove of binding the individual to these wiring arrangements as a condition of service," he stated.

The ANSUL Twins

ANSUL CHEMICAL COMPANY
MARINETTE » » » » » WISCONSIN

"AN OLD NAME IN A YOUNG INDUSTRY"

CURTIS

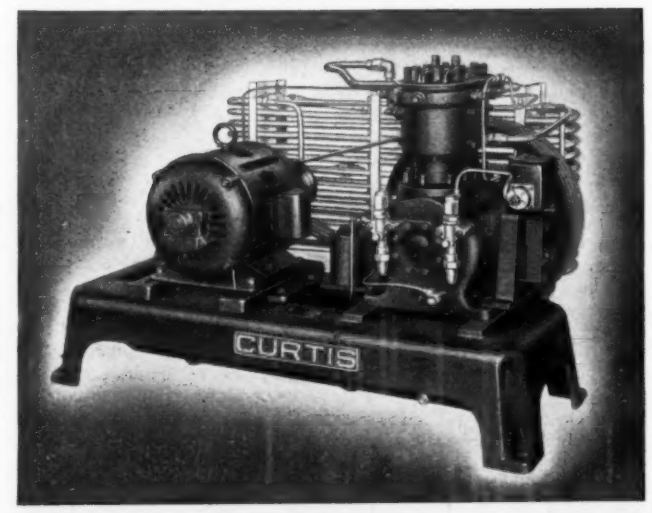
Specify CURTIS and be sure

ELECTRIC REFRIGERATION AND AIR-CONDITIONING UNITS

The sure way to satisfaction from a refrigeration or air-conditioning installation is to be certain that its most vital part—the condensing unit—is built by Curtis. Their constant, trouble-free performance is the result of 42 years' specialized experience in building fine compressors.

Complete Line—65 Units · Extra Capacity · Slow Operating Speed · Experienced Design · Low Upkeep · Rugged Construction · Fine Materials and Workmanship

Curtis enjoys the highest capital and credit rating—a Curtis product won't become an "orphan".



CURTIS Curtis Refrigerating Machine Company
Division of Curtis Manufacturing Co.
1912 Kienlen Avenue — St. Louis, Mo.

In Canada:
Canadian Curtis Refrigeration Co., Ltd.
20 George St., Hamilton, Ont., Can.

The new

C. I. T.

6%

BUDGET PLAN

REDUCES TIME
PAYMENT COSTS

Display this sign in your windows and showrooms. Get copies of this sign and of the C. I. T. 6% Budget Plan Chart No. 7165 from the nearest C. I. T. Office.

Now Extended to Refrigerators

and Major Mechanical Household Appliances

The new C. I. T. 6% Budget Plan for refrigerator dealers fills the gap left by the withdrawal of F. H. A. Your prospects who were considering a purchase under F.H.A. will welcome the extension of *this* Plan to the appliance field. Alert dealers are adopting and advertising it to help them reach their greater 1936 sales opportunities. Although the new C. I. T. 6% Budget Plan offers drastically reduced rates, C. I. T. retains its same high quality localized credit and collection service. Dealers are assured that their interests are safeguarded by C. I. T.'s resources and experience.

REFRIGERATORS • AUTOMATIC HEATING • WATER HEATERS • DISH WASHERS • ELECTRIC RANGES • COMMERCIAL REFRIGERATION • ROOM COOLERS and AIR CONDITIONING

Call the nearest C. I. T. Office today

Abilene – Akron – Albany – Altoona
Amarillo – Asheville – Atlanta – Augusta
Bakersfield – Baltimore – Bangor – Bay Shore
Beaumont – Beckley – Billings – Binghamton
Birmingham – Boise – Boston – Bridgeport
Bronx – Brooklyn – Buffalo – Butte – Camden
Cape Girardeau – Carbondale – Cedar Rapids – Charleston – Charlotte – Chattanooga
Chicago – Cincinnati – Clarksburg – Cleveland
Columbia – Columbus – Cumberland – Dallas
Dayton – Denver – Des Moines – Detroit
El Paso – Erie – Evansville – Florence
Fort Wayne – Fort Worth – Fresno – Glens Falls
Greensboro – Greenville – Hagerstown
Harrisburg – Hartford – Hempstead – Hickory
Houston – Huntington, W. Va. – Indianapolis
Jacksonville – Jamaica – Jamestown
Jersey City – Johnson City – Kansas City
Knoxville – Lexington – Lincoln – Little Rock
Los Angeles – Louisville – McAllen – Manchester
Memphis – Miami – Milwaukee – Minneapolis
Mobile – Montgomery – Montpelier – Mt. Vernon
Nashville – Newark – Newburgh – New Haven
New Orleans – New York – Norfolk
Oklahoma City – Omaha – Orlando
Paducah – Paterson – Peoria – Perth Amboy
Phoenix – Philadelphia – Pittsburgh
Portland, Me. – Portland, Ore. – Portsmouth
Poughkeepsie – Providence – Raleigh
Reading – Reno – Richmond, Ind.
Richmond, Va. – Roanoke – Rochester
Rome, Ga. – Sacramento – St. Louis – Salisbury
Salt Lake City – San Antonio – San Diego
San Francisco – San Jose – Scranton – Seattle
Spartanburg – Spokane – Springfield, Mass.
Springfield, Ohio – Stockton – Syracuse
Tampa – Toledo – Tucson – Tulsa – Utica
Washington – Watertown – Wheeling
White Plains – Wichita – Wilkes-Barre
Wilson – Yakima – Youngstown – Zanesville

C.I.T.

C. I. T. CORPORATION • NEW YORK • CHICAGO • SAN FRANCISCO
A UNIT OF COMMERCIAL INVESTMENT TRUST CORPORATION
CAPITAL AND SURPLUS MORE THAN $100,000,000

HELPING DEALERS TO WIDEN THE SCOPE OF THEIR BUSINESS

INDUSTRIAL COORDINATOR DEFINES DUTIES OF BUSINESS

Council Set Up By Government Makes Report

Advises Government to Avoid Competition With Business

WASHINGTON, D. C.—Guide and protector, but not competitor, was the way representatives of management, capital, and labor, meeting here March 12 as a "Council for Industrial Progress" under the direction of George L. Berry, coordinator for industrial cooperation, defined the role of the government in relation to industry, committee reports show.

"The Government's true function," the reports say, "is to protect and promote the economic activities of its citizens, not to supplant them." The committee further found that "the expansion of government function into fields of private competitive enterprise, for many years, has been a disturbing element in the nation's business, and that the government expenditures will be reduced and revenue increased if the federal government withdraws from active competition with private enterprise."

Coordinator Appointed by President Roosevelt

Mr. Berry was named by President Roosevelt to supervise conferences of industry representatives for the consideration of the best means of accelerating business recovery, eliminating unemployment, and maintaining business and labor standards.

Regarding the council as an initial step toward future cooperation between industry and government, council members agreed that such cooperation within industry and between industry and government, must be relied upon as a guard against government dominance of industry.

Admitting the danger of government dominance and at the same time recognizing that individual initiative, free competition, and the incentive of profit have been major influences in the United States' industrial development, the council agreed that recent economic experience has proved private industry incapable of administering business and industry entirely free from government intervention.

Production Control Is Unwise and Ineffective

Four resolutions which were included in the report of the committee on National Industrial Policy indicated the general trend of the meetings. They were: production control, except under emergency conditions, whether imposed by the government or by voluntary agreement in industry, is unwise and ineffective; a policy of minimum wage and the payment of substantial overtime rates for hours in excess of a reasonable work week should be established; unfair competitive practices that interfere with the maintenance of a free and open market for the sales and distribution of goods should be curbed; and a permanent advisory council consisting equally of representatives of management, labor, and consumer interests should be Senate appointed.

Complete reports of the Committee on Fair Trade Practices, and the Committee on Government Competition With Private Enterprise appear on this page.

Unfair Trade Practices Condemned by Committee

REPORT OF THE COMMITTEE ON FAIR TRADE PRACTICES

As Adopted by the Council for Industrial Progress March 12, 1936

1. The Committee goes on record as favoring legislation which will enable industry to correct and prevent unfair trade practices which are costly and injurious to free and fair competition and further goes on record as condemning as contrary to public policy in industry all such practices in competition as may tend to increase the cost of competition and thus necessitate increased cost to consumers.

2. The Committee expresses the view that the authority and jurisdiction of the Federal Trade Commission should be increased to enable it to deal effectively with competitive and group buying practices shown to be destructive in any particular industry or trade, although they may not now be considered illegal, and that the appropriations for the personnel of the Commission should be expanded proportionately to take care of the conditions. (The foregoing represents a preliminary and interim and not a final report.)

3. The Committee suggests that the Council itself shall give consideration to fostering legislation that will result in enforcing Group II Rules when they have been adopted by a substantial majority of an industry or trade and have been approved by the Federal Trade Commission.

4. The Committee favors legislation which will make it unlawful for any person engaged in commerce to be a party to or assist in any transaction or sale which discriminates against competitors of the purchaser by giving any discount, rebate, allowance, or advertising service allowance to the purchaser over and above any discount, rebate, allowance, or advertising service allowance available at the time of such transaction to said competitors in respect of the sale of goods of like grade, quality, and quantity.

5. The Committee condemns, as being unfair trade practices:

(*a*) Employment of workers in the manufacture and/or distribution of goods, articles, merchandise, or services for hours substantially in excess of the average hours of work prevailing in an industry or trade or at hourly wages substantially less than the average hourly wages for similar types of employment paid in such industry.

(*b*) Sales below cost when made for the purpose or with the effect of injuring a competitor or misleading the public.

(*c*) The making of loss-leader transactions for the purpose or with the effect of misleading purchasers and to unfairly divert trade or otherwise injure competitors.

(*d*) Circulation of false or misleading information, however it may be achieved.

(*e*) Granting of rebates irrespective of form, whether secret or open.

(*f*) Defamation of competitor or his products or services.

(*g*) Payment of unearned allowances and the giving of special services and the payment of unjustified claims whether in the form of money or otherwise.

(*h*) Inducing a breach of contract.

(*i*) Inducing sales by selling, buying, or exchanging other commodities at prices other than the market prices.

(*j*) Misbranding or false marking which injures a competitor or deceives a purchaser.

(*k*) Price discriminations which bear no reasonable relation to savings in selling, manufacturing, or transportation costs. In this connection, the Committee recommends that Section 2 of the Clayton Act be amended so as to state clearly the discriminations that are intended to be prohibited.

6. Open price reporting for the protection of both buyers and sellers should be permitted and sponsored by the Government because competition should express itself openly and fairly and not in secret nor discriminatory form. The Committee recommends the approval of properly conceived plans for conducting openly announced pricing with the understanding that no such plan shall be used as a device or cloak for price fixing.

Intrusion of Government into Private Competitive Enterprise Is Disturbing and Destructive

REPORT OF THE COMMITTEE ON GOVERNMENT COMPETITION WITH PRIVATE ENTERPRISE.

As Adopted by the Council for Industrial Progress March 12, 1936.

Your Committee has completed a preliminary study of the subject assigned to it and has reviewed such reports of public and private agencies as have been available in the short time since its formation. It is anticipated that additional data in the nature of reports, statistics, etc., may later be made available to this Committee, in which event the Committee may desire to submit a later report.

At the outset of our studies and deliberations, the committee unanimously adopted the following resolution:

That Government Competition with private industry for the purpose of this Committee's report shall be construed to mean direct competition by the Federal Government with private enterprise.

Your Committee recognizes that there are distinct types of Government participation in business which should be continued and encouraged, for example:

A. Certain Governmental activities aimed toward the advancement of science and scientific knowledge, the acquisition and distribution of information to commerce, agriculture, and business. Such functions are normal Governmental operations, normally planned and executed by Federal Departments and not economically feasible by private business.

B. Such Governmental functions as the National Defense Program; the Maintenance, Control, and Improvement of Navigable Water; Flood Control, Irrigation, and Prevention of Soil Erosion, which are normally Governmental functions, but in these the facilities of private enterprise should be utilized in the interest of economy and efficiency.

Stated conversely, your Committee unanimously agrees that only under the following conditions is the Government justified in entering into competition with private enterprise:

1. When required to assure adequate preparation for, and creation of, the facilities for National Defense.

2. For the conservation of natural resources.

3. When for any reason private enterprise fails to conduct needed scientific research and exploratory activities to advance industrial development, or in the interest of public health and safety.

4. When for any reason private enterprise fails to render a service necessary for the general welfare.

Government competition with private enterprise is not normally justified to preclude the possibility of the exploitation of the public by private industry, since the Anti-Trust Laws may be relied upon to control and correct this situation.

The intrusion of Government into competition with private enterprise, except in situations where the Public Welfare can only thus be served, is wholly destructive. It invites and cultivates a growth of Bureaucracy. It necessarily increases Government expenditure while decreasing tax revenues and it operates to dry up the sources of Government income. Once embarked upon this course, the Government is placed in the difficult position of having either to absorb the functions of private enterprise which its competition has destroyed or of withdrawing completely from the devitalized fields of private activity. Withdrawal is always difficult because of the human equation operating through the entirely natural desire of Government employees to continue to hold their jobs. Any activity once introduced into the Government inevitably tends to expand to larger and more formidable proportions.

The Government's true function is to protect and promote the economic activities of its citizens, not to supplant them.

Government competition is felt to such an extent that an enumeration of examples is beyond the scope and ability of this report, but an example is found in present Government competition with the construction industry, not only because of the size and controlling importance of this industry, but because of its influence on all branches of heavy industry, which through construction provide the foundation and framework for the prosperity of consumable goods industries.

Second only to agriculture in value of production and employment, this industry normally is of primary importance as a stabilizer of labor conditions through its widely diversified employment, ranging from the professions of design and supervision, through the various skilled trades and from there to the factory, mill, forest, and mine for the procurement of materials of construction. Construction materials reach into all branches of industry and their production and incorporation in construction constitute the most important normal field of employment for all classes of labor.

A revival of private industry will permit the return of labor to its normal occupations, will hasten the return to American standards of efficiency and maintain the dignity of labor which has made the American working man the Nation's greatest single influence for the advancement of democratic ideals.

In conclusion, except as set out in the opening paragraphs of this report, your Committee finds:

1. The expansion of Government function into fields of private competitive enterprise, for many years, has been a disturbing element in the nation's business.

2. That the Government expenditures will be reduced and revenue increased if the Federal Government withdraws from competition with private enterprise except under the conditions hereinbefore specified.

3. That the Government's function is to protect and promote the economic activities of its citizens, not to supplant them. Under normal economic conditions, Government competition with private enterprise is conducive to the destruction of the nation's established profit system, and contributes to the development of a socialized industry.

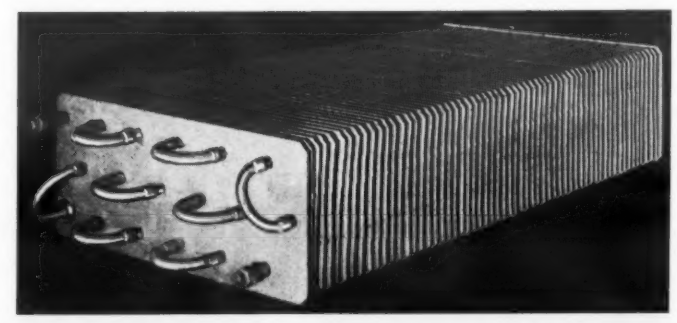
And finally your committee recommends that the Federal Government pursue the sound policy of using to the maximum the facilities of private enterprise.

AIR-RITE
DEODORIZER
for refrigerators

Keeps refrigerators sweet. Suspend from any shelf. Attractive finish. Size 2½"x3½". To retail for $1. Write for literature and prices.
Address Box 35, Fairview Station.
Walway Co.
DETROIT MICHIGAN

BRUNNER
Send for the New
REFRIGERATION CATALOG
Eight Models of Compressors
Forty-one Models of Highsides
from 1/6 H. P. to 15 H. P.
BRUNNER MANUFACTURING CO.
UTICA, N. Y.

HIGHEST Filtrine EFFICIENCY
WATER COOLERS
COMMERCIAL — AIR CONDITIONING
From 2 gals. per hour to 500 gals. per minute
WATER FILTERS — STEEL PIPE COILS
FILTRINE MFG. CO., Brooklyn, N. Y.


1748 COIL LISTINGS FOR WALK-IN COOLERS IN CATALOG NO. 336
Shallow Fins, High Fins, Wide Coils, Narrow Coils, Short ones or long, many tubes, few tubes . . . in short, a coil to suit any specific requirement. All copper . . . fused bond solid fins . . . electro tin finish.
TRENTON AUTO RADIATOR WORKS
210 West 65th, N.Y.C. TRENTON, N.J. 5114 Liberty Ave., Pittsburgh, Pa.

KRACK ENGINEERED
LIFETIME COILS AND UNITS
CUSTOMIZED COILS:
SUR-E-FEX, HUM-E-FEX, LOUVR-E-FEX, AIR-E-FEX
CUSTOMIZED UNITS: FAN-E-FEX, (Standard and De Luxe), TRANS-E-FEX, DRAFT-E-FEX, BLO-E-FEX, VERT-E-FEX For Refrigeration, BREEZ-E-FEX, COMF-E-FEX, SAN-E-FEX For Air Conditioning. Send For New Literature
REFRIGERATION APPLIANCES, INC., 1342 W. Lake Street, Chicago

Maison Blanche Adds Model Display Rooms To Electrical Floor

NEW ORLEANS—A model kitchen, living room, laundry, and sewing room have been included in Maison Blanche Co.'s new "electrical floor," which brings together in 10,000 sq. ft. of space the major electrical appliances which were formerly shown in scattered departments.

John E. Eberhardt will manage the new department.

Scientifically controlled lighting from a midnight blue ceiling illuminates the floor and modernistic fixtures, which are tinted in a series of off-shade browns.

Each room displays its appropriate electrical fixtures. In the living room, air-conditioning units and radios are demonstrated. A Frigidaire, electric stove, and small electrical appliances are shown in the kitchen. The laundry is equipped with Easy washing machines and ironers; and the sewing room with White electric sewing machines.

Complete stockrooms are maintained on the floor for spare parts for the appliances.

General Electric Co. Sales Gain 27%

SCHENECTADY—Sales billed (all products) by General Electric Co. for the first quarter of 1936 amounted to $51,423,071, a 27% increase over the $40,393,538 for the same quarter last year, President Gerard Swope announced to stockholders of the company at their annual meeting recently.

Profit available for dividends amounted to $7,086,830 for the first quarter of 1936, compared with $5,390,931 for the first quarter last year, an increase of 31%. This is equivalent to 25 cents a share for the 1936 quarter and 19 cents a share for the 1935 quarter, Mr. Swope said. The dividend payable to stockholders on April 25 was at the rate of 25 cents a share, compared with the 15 cents a share paid in April a year ago.

Orders received during the first quarter of 1936 amounted to $59,569,879, which, compared with $49,379,932 for the same quarter of 1935, amounts to an increase of 21%, Mr. Swope reported.

For the twelve months ending March 31, 1936, orders received amounted to $227,551,534, an increase of 17% over the twelve months ending March 31, 1935.

Net sales billed for the twelve months' period amounted to $219,762,966, an increase of 29% over the corresponding period a year ago, according to the report.

Salesman Uses Own Kitchen For Demonstrations

BROOKLYN, N. Y.—By installing a complete outfit of Westinghouse kitchen equipment in his home, Salesman George Holman of the Times Appliance Co., Westinghouse distributorship here, has provided himself with a silent-sales partner, which, he claims, has enabled him to "mix business with pleasure."

Salesman Holman entertains on a generous scale. He noted that at his stag parties, the guests usually wind up in the kitchen which, he decided, was a rather out-of-date room for an appliance salesman to own. So he had the kitchen equipped with a DXL model Westinghouse refrigerator, a Westinghouse range, ironer, dishwasher, and food mixer, and installed a tap room equipped with a commercial unit for cooling beer, in his basement.

Since installing the new equipment, Mr. Holman has had many comments on his two rooms. Better than this, after some of his dealer stag parties, the dealers—as many as six—have returned to his house with customers who want to inspect the all-Westinghouse kitchen and tap room—a procedure which is entirely sales-productive, states Salesman Holman.

Distributor Gives Sparton In Theater Contest

NORFOLK, Va.—Presentation of a Sparton refrigerator as the prize in a theater contest here is one of the steps in the sales promotion plan by which Cuthrell Co., Sparton distributor, has increased its business 100% in the last year, Sparton officials say.

The company will have both refrigerators and radios on display in the lobby of the Plaza theater where the contest is to be held.

One of the dealers in the Cuthrell territory, the Commercial Trading Corp., of Portsmouth, headed by Paul A. Blanford, is purchasing its refrigerators and radios in carload lots, the distributorship reports.

Mrs. Richards Appointed Home Economist for F-H Laundry Line

INDIANAPOLIS — Appointment of Mrs. Faith M. Richards of Springfield, Ill., as home economics supervisor of the Fairbanks-Morse Home Laundry Laboratory was announced recently by officials of the F-M home appliance division.

In her new position Mrs. Richards will act as consultant to dealers and distributors of F-M washing machines and ironers both on technical problems and on giving assistance to their salesmen in the retail selling field.

For the past six years Mrs. Richards has been instructor of Laundering at Illinois State School of Domestic Science. In addition to this, she has for many years given lecture-demonstrations on home laundry equipment for household science groups, State Fair groups, and radio audiences. She has also conducted classes to train appliance salesmen in methods of demonstrating and selling home laundry equipment.

Sparton Distributor to Hold Benefit Cooking School May 19-22

RICHMOND, Va.—Kolbe, Inc., Sparton distributor will sponsor a benefit cooking school here May 19-22 to publicize its product to the 20,000 Richmond women expected to attend.

The school will be staged for the Florence Nightingale Circle, which is sponsoring the Sheltering Arms Hospital here; the Woman's Auxiliary to the Richmond Academy of Medicine; American Legion Auxiliary; and the Sunshine Circle, King's Daughters, which is sponsoring the Crippled Children's Hospital.

Mrs. Mary E. Rich, of the Corn Products Refining Co., who has been obtained by Kolbe to conduct the school, will use a Sparton refrigerator for her demonstrations. Refrigerators will also be displayed in the lobby of the Richmond Mosque where the meetings will be held.

An active newspaper advertising campaign and the refrigerator to be given away are expected to draw crowds to the school.

Jeweler & Grocer Are Birmingham Dealers

BIRMINGHAM, Ala.—The ranks of refrigeration dealerships in this territory have received two unusual newcomers, a jewelry store and a grocery store.

First jewelry store in this territory to enter the refrigerator field is a Birmingham concern, A & A Ash, which has taken over Kelvinator.

S. M. Bowan, grocer in Athens, Ala., has sold more refrigerators in his town than any other dealer, and sees nothing incongruous about a grocery store handling refrigerators.

"I sell what goes into them, why not the refrigerator itself?" he asks.

Jacoby & Williams Added To Anchor-Lite Staff

PITTSBURGH—Two new additions to the sales staff of Anchor Lite Appliance Co., distributor of Crosley refrigerators, radios, and washers, were recently announced by Harold W. Goldstein, president.

Jerome Jacoby will contact the wholesale trade in Beaver, Butler, Lawrence, Mercer, and Venango counties; and David L. Williams will cover the counties of Elk, Cameron, Jefferson, Clearfield, Center, and Blair in western Pennsylvania.

Sign Language Sells Box to Deaf and Dumb Couple

TROY, N. Y.—Ability to talk with his hands enabled Theodore Gilboe of DeVoe Electric Co., General Electric dealer here, to sell a G-E model M-6 to a deaf and dumb couple.

Salesman Gilboe brought the couple to the store, told them the entire G-E story in sign language, demonstrated the box, and within an hour got a signed order. He expects to sell refrigerators to several of the couple's friends this spring.

Production of Kero-Unit To May 15 Sold Out

GREENVILLE, Mich.—Entire production of Kero-Unit, kerosene-burning, absorption-type refrigerator produced by Gibson, has been sold out until the middle of May, claims L. E. Taufenbach, sales manager of the Gibson Electric Refrigerator Corp.

Export shipments of this 6-cu. ft. model, he said, are double what they were last year at this time.

Advertising Features Crosley Washer Line

CINCINNATI—Crosley Radio Corp. has just issued to its dealers an eight-page, newspaper size wall sheet on its washing machine and ironer lines.

Done in colors, the promotional piece outlines the selling features of Sav-a-maid washing machines, the new wringer-less Spe-Dry washing machine, and its companion piece, the foot-control Crosley ironer.

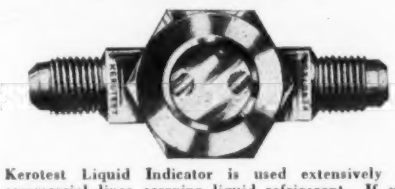
A double spread sheet, addressed to the customer in terms the dealer can use in selling the unit, is included in the copy which is devoted to the Spe-Dry washer.

Besides enlarged color reproductions of the new washer and ironer models and copy explaining their selling points, the supplement contains illustrations of special conveniences.

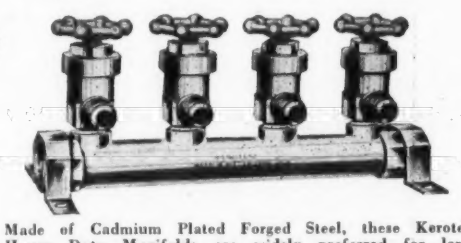
KEROTEST

ACCESSORIES *Every* REFRIGERATION ENGINEER SHOULD KNOW

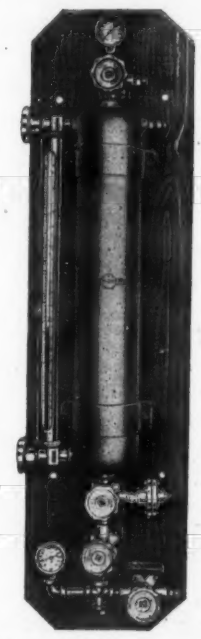
Just a few of the many accessories pioneered and perfected by Kerotest to aid you in successfully solving many modern refrigeration problems and add to the efficiency of any installation you contemplate.



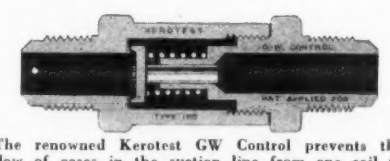
Kerotest Liquid Indicator is used extensively on commercial lines carrying liquid refrigerant. If you see bubbles through the heavy annealed sight glass, a shortage of refrigerant is revealed . . . a valuable aid to service men everywhere. See the Kerotest Catalogue for full details.



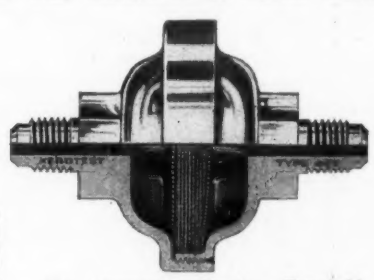
Made of Cadmium Plated Forged Steel, these Kerotest Heavy Duty Manifolds are widely preferred for large commercial refrigeration and air conditioning systems. Fitted with Kerotest Diaphragm Packless Valves with handwheels, they earn their cost many times over by positively preventing large leakage losses of expensive refrigerant. Fully described in the Kerotest Catalogue.



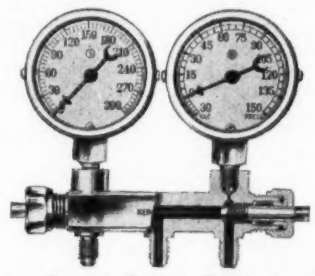
Kerotest Refrigerant Charging Stands incorporate many unique time and economy features . . . enable you to charge units direct in the service shop or charge small drums for convenient use on any individual job . . . eliminate undercharging or overcharging . . . saves all loss of refrigerant . . . saves time—can be set up in 5 minutes . . . compound gauges always indicate condition of pressure and vacuum under which the charge is made. See your Kerotest Catalogue for full details.



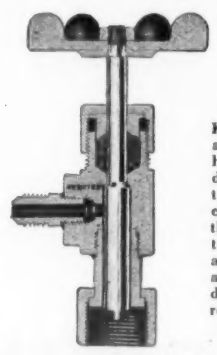
The renowned Kerotest GW Control prevents the flow of gases in the suction line from one coil to another on multiple installations . . . eliminates condensation of warm gas in colder coils . . . cuts running time of compressor . . . makes positive temperature control possible . . . pays for itself in a short time. See full details in the Kerotest Catalogue.



The inexpensive Kerotest Household Size Filter—one of a complete line of Filters and Dryers that make complete filtration possible and complete removal of foreign matter and "oil carbon". Extraordinary capacity is an outstanding feature. Check the specifications in the Kerotest Catalogue.



The new Compact Kerotest Combination Testing Outfit is an indispensable aid to every service man . . . used for purging air or gas from high side . . . charging oil in low side and testing for leaks . . . setting low side controls, charging high or low side, setting expansion valves, purging gas from gauge lines, etc. See the Kerotest Catalogue for complete data and diagrams.



Kerotest Refrigeration Charging and Purging Valve is ideal for hermetically sealed units . . . designed with union or swivel type nut at bottom so valve can be attached without turning the valve proper—very advantageous for limited space . . . also available with various nut and nipple connections for different types of electric refrigerators.

These accessories and many more are fully described in the Kerotest Catalogue—the most thoroughly used handbook of information in the refrigeration world. Do you have your copy?

KEROTEST MANUFACTURING COMPANY
PITTSBURGH, PENNSYLVANIA

KEROTEST

Jobbers with Local Stocks

Albany, N. Y.....Hoy & Co.
Atlanta, Ga...J. M. Tull Metal & Supply Co., Inc.
Baltimore, Md.....Clendenin Bros., Inc.
Baltimore, Md...Melchior, Armstrong, Dessau Co.
Boston, Mass.....A. E. Borden Co.
Bridgeport, Conn.....Parsons Bros.
Brooklyn, N. Y.
Coleman Electrical Supply Co., Inc.
Buffalo, N. Y.....Root, Neal & Co.
Cambridge, Mass...Melchior, Armstrong, Dessau Co.
Chicago, Ill.....H. W. Blythe Co.
Chicago, Ill.....Max A. R. Matthews
Chicago, Ill.....Borg-Warner Service Parts Co.
Chicago, Ill...Refrigeration Equip. & Supply Co.
Chicago, Ill.....Fred C. Kramer Co.
Cincinnati, Ohio.....The Merkel Bros. Co.
Cincinnati, Ohio.....Williams & Co., Inc.
Cleveland, Ohio.....Williams & Co., Inc.
Columbus, Ohio.....The Justus & Parker Co.
Dallas, Texas.....The Electromotive Co.
Davenport, Iowa.....Republic Electric Co.
Denver, Colo.....Auto Equipment Co.
Des Moines, Iowa.....C. L. Percival Co.
Detroit, Mich.....J. M. Obere, Inc.
El Paso, Texas.....Zoark Hardware Co.
Fargo, N. D.....Fargo Foundry Co.
Fernwood, Miss.....Enochs Sales Co.
Fort Wayne, Ind.....H. J. Schroeder Co.
Greensboro, N. C....Home Appliance Service Co.
Harrisburg, Pa...Melchior, Armstrong, Dessau Co.
Honolulu, T. H.....Theo. H. Davies & Co., Ltd.
Houston, Texas.....D. C. Lingo Co.
Houston, Texas..Walter Refrigeration Supply Co.
Indianapolis, Ind.....F. H. Langsenkamp Co.
Kansas City, Mo...Forslund Pump & Machinery Co.
Long Beach, Calif.....L. B. Marsh
Los Angeles, Calif....Refrigeration Service, Inc.
Macon, Ga.....Lowe Electric Co.
Memphis, Tenn...United Refrigerator Supply Co.
Milwaukee, Wis...Chase Brass & Copper Co., Inc.
Minneapolis, Minn.
Chase Brass & Copper Co., Inc.
Minneapolis, Minn.
Refrigeration & Industrial Supply Co., Inc.
Montreal, Quebec, Canada
Railway & Engineering Specialties, Ltd.
Newark, N. J.....McIntire Connector Co.
New Orleans, La.....Enochs Sales Co.
New York, N. Y.....Aetna Supply Co.
New York, N. Y.
Melchior, Armstrong, Dessau Co., Inc.
New York, N. Y..Paramount Electrical Supply Co.
Oklahoma City, Okla.....Mideke Supply Co.
Omaha, Nebraska.....United Supply Co.
Peoria, Ill.....Isaac Walker Hardware Co.
Pittsburgh, Pa.....Williams & Co., Inc.
Philadelphia, Pa.
Melchior, Armstrong, Dessau Co., Inc.
Portland, Oregon.....Harrison Sales Co.
Providence, R. I.
Rhode Island Supply & Engineering Co.
Puerto Rico, San Juan..Refrigeration Supply Co.
Rochester, N. Y.....Ontario Metal Supply, Inc.
San Francisco, Calif...California Refrigerator Co.
St. Louis, Mo.....The Spangler Co.
Salt Lake City, Utah.....Peerless Utah Co.
San Antonio, Tex.....Straus-Frank Co.
Sacramento, Calif.....J. N. Blair Co.
San Francisco, Calif.
Refrigerating & Power Specialties Co.
San Juan, Puerto Rico..Refrigeration Supply Co.
Seattle, Wash.....Harrison Sales Co.
Sioux City, Iowa..National Refrigeration Service
Springfield, Ill.....United States Electric Co.
Springfield, Mass.....C. P. Payson Co.
Syracuse, N. Y.....Syracuse Supply Co.
Toronto, Ont., Canada
Railway & Engineering Specialties Co.
Tulsa, Okla.....Machine Tool & Supply Co.
Vancouver, B. C., Canada.....Fleck Bros., Ltd.
Waterloo, Iowa.....Winterbottom Supply Co.
White Plains, N. Y.
County Seat Plumbing Supply Co., Inc.
Wilkes Barre, Pa.....Radio Service Co.
Winnipeg, Manitoba, Canada
Railway & Engineering Specialties Co.

Factory Representatives

Chicago, Ill.....G. C. Taylor
Dallas, Texas.....C. E. Boren
Dayton, Ohio.....E. J. Kimm
Denver, Colo.....R. L. Chambers
Detroit, Mich.....T. F. Wilson
Los Angeles, Calif.....Van D. Clothier
New York, N. Y.....K. M. Newcum
San Francisco, Calif...A. W. V. Johnson
Omaha, Nebr.....Austin Jones

Australia Representatives

F. C. Lovelock, Ltd.
235 Clarence St.
Sydney, Australia

General Export Representatives

Melchior, Armstrong, Dessau Co.
390 Fourth Ave.
New York City, N. Y., U.S.A.

Around the World

With George F. Taubeneck

Great Appliance Market Waits Development in New Zealand

In this issue Editor George Taubeneck completes his story about New Zealand (last week's instalment was also on this country) and tells about the boat trip from Auckland to Sydney.

Next week he will report his very interesting sojourn in Melbourne, Australia, where he was honored with a formal dinner by the refrigeration leaders of the city.

About the middle of May Mr. Taubeneck is expected to arrive in Paris, where he will start a tour of the principal European cities.

He will attend the International Congress of Refrigeration at The Hague, June 16 to 27, and he will present a paper on "The Development of the American Household Electric Refrigeration Industry."

No Oil Burners

No oil burners (domestic) are in use in New Zealand. Fact is, there are practically no central heating systems! On the coldest days, New Zealanders huddle and hover around small fires and stoves, and wear their coats indoors. Houses, nearly all wooden, are not insulated.

What an educational job needs to be done along this line!

Possibly a thousand washing machines have been installed—a business which is just getting under way in New Zealand.

But radios and ranges—ah! In spite of the law requiring radio set owners to pay a license fee of about $6 a year, more than 178,000 have been sold.

Twenty thousand electric ranges (New Zealanders call them stoves) have been sold by the government hydroelectric power company, which now controls their sale.

Electricity, which rates at 230 volts, 50 cycles, sells for one to three cents a "unit" (kwh.). It has fairly violent line fluctuations.

Scarcely any gas or kerosene-operated Electrolux (British) refrigerators have been sold in New Zealand. The market for kerosene jobs is admittedly wide and awaiting cultivation.

It was the concensus of opinion at the luncheon that New Zealand should absorb at least 12,000 household electric refrigerators in the next five years—barring too many government peccadillos.

Advanced 'New Deal'

A labor government is in power in New Zealand now, and is working on a program which makes the Rooseveltian New Deal seem as Toryish as a wealthy Union League club member who has always voted the straight Republican ticket.

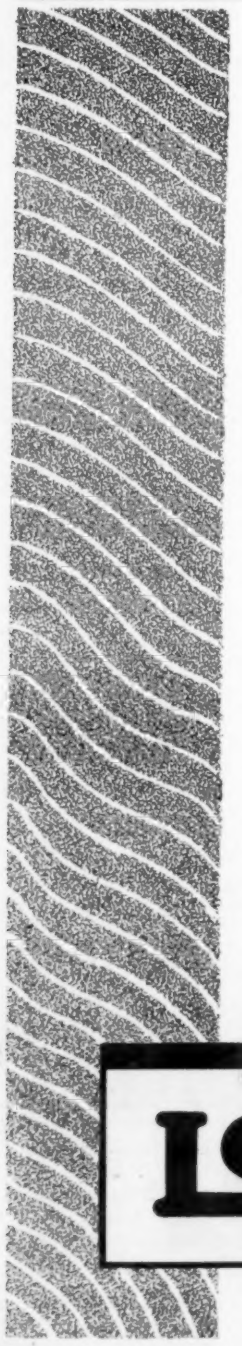
Chief idea of New Zealand's New Deal seems to be the equalization of income (something which seems to obtain anyway, for in New Zealand there is no poverty-stricken class, not more than a half-dozen really wealthy men, and few salaries which pass $100 a week) through taxation, and through the fixing of minimum wage rates.

Tariffs are terrifically high, which makes trade with British manufacturers (who get a preferential tariff rate) almost imperative.

Inhabitants of New Zealand, outside the native Maori race, are almost entirely English or of English stock. Orientals are kept out by a head tax of one hundred pounds, sterling, which must be paid before they gain admission.

New Zealand has been settled and built in less than a hundred years. Auckland is well planned and laid out, a city of gardens and vistas, of comfort and spaciousness.

Wool and dairy products are the principal industries of New Zealand. The butter is said by the well-traveled stewards of the steamship companies to be the best in the world.



condensers
evaporators

for electric refrigeration and air conditioning applications — domestic and commercial.

LONG MANUFACTURING DIVISION
BORG-WARNER CORPORATION

LONG

DETROIT, MICH.
WINDSOR, CAN.

No Used Models

Temperature and humidity are so mild that refrigeration equipment seems to last forever in New Zealand.

Hence there is no used refrigerator problem whatsoever in New Zealand, nor is service troublesome.

(Possibly, New Zealand would be a good dumping ground for excess American stocks of repossessed refrigerators, especially in view of the high cost of new models, and the light burden placed upon them.)

A new market for ice makers has been created by commercial refrigeration salesmen who introduced the idea of penny ice blocks (flavored ice cubes), an idea which caught on tremendously, and which is now serious competition for the New Zealand ice cream business.

* * *

Bond & Bond Leader in Commercial Sales

Bond and Bond, Ltd., is exclusive distributor for Servel commercial refrigeration equipment in New Zealand—has been for eight years, the whole time the company has been in the refrigeration business. It is generally credited with having done the best commercial selling job in the country.

The company operates a general distributing merchants and importers business, with a special department handling refrigeration equipment for both commercial and household use. Only American-made refrigeration equipment is handled by the firm.

H. V. COE is manager of the company, W. O. LONG is sales manager.

Refrigeration department of the business maintains a staff of regular and commission salesmen working the Auckland provincial territory intensively, selling both directly and through dealers. Sub-agents, franchised under Bond and Bond, handle other New Zealand territory: Neill & Co., Ltd., at Dunedin in the South Island; Jos. Nathan & Co., Ltd., in Taranaki, Hawks Bay, and Wairarapa territory, and Toop & Nelson, Ltd., in Wellington City and suburban districts.

Sales of refrigeration equipment by the company totaled about $250,000 during 1935, of which about $50,000 represented household electric refrigerators, the rest commercial equipment.

The company has its own service and spare parts department. Advertising is done principally through the press, periodicals, and direct mail, but Mr. Coe considers direct canvassing the best possible method of obtaining prospects.

Field for air conditioning in New Zealand, in Mr. Coe's opinion, is limited, owing to the fact that extremes of temperatures are not experienced there. He thinks the NEWS is "an excellent publication," and values it most for "the information given on selling and service methods and manufacturing developments."

While the company is vitally interested in household refrigeration, which, in Mr. Long's opinion, is still in its infancy in New Zealand, it enjoys what he terms "a particularly good connection" in commercial refrigeration, with Servel.

"Our sales in this field (commercial) are mainly the result of personal canvass of those branches of commerce most likely to be particularly interested in refrigeration, but a particularly gratifying proportion of our business comes as a direct result of the contact by potential buyers with well-satisfied users of Servel plants."

Commercial sales, he says, are fairly well spread out over such businesses as butchers, dairies, confectioners, ice cream manufacturers, fish dealers, and bacon curers.

"A feature of the confectionery business which has developed recently," Mr. Long said, "is the manufacture of frozen cubes based on milk, sweetened with sugar syrup and flavored with fruit essence or pure fruit juice.

"This is likely to seriously rival the sale of ice cream in the future."

* * *

Burns Handles Variety Of Refrigeration Lines

Another large company in the New Zealand refrigeration picture is John Burns & Co., Ltd., distributor for Brunner and Parker Frostkist commercial equipment, Sanitary household equipment, and J. & E. Halls Ltd., commercial equipment, the latter being manufactured in England.

Other major lines handled by the company include Ruston-Bucyrus excavators, both English and American makes; Ruston & Hornsby diesel engines, Paxman diesel engines, Parker stone crushers, Lancashire electric motors, National radios, and Consolidated pneumatic tools. The last-named is American-made, the others are British imports.

The company has about 20 salesmen operating in and around the city, most of them working on salary and commission, doing a direct sales job on commercial and household equipment. Through its headquarters in Auckland and branches in Wellington, Christchurch, and Greymouth, the company sells at wholesale to stores and dealers throughout the country. Resident representatives are located in most of the larger cities.

Best sales promotional moves, the company has found, are through extensive daily paper advertising, periodicals, and direct mail, backed up by canvassing on the part of salesmen.

FRANK PALMER, manager of the company's engineering division, is another person who is not overly optimistic about the future of air conditioning in the country.

"I fear that air conditioning will not makes great strides here, owing to the cost of installation, and the fact that the population and climate hereabouts hardly call for it," he says.

"Our average temperature here is about 70° F. It might go, if it were built into the original building; but our present buildings are hardly suitable, and the ductwork and other changes would be too unsightly."

A couple of things Mr. Palmer would like to see carried out in the manfacture of household units are more attention to the rust-proofing of interior screws supporting the evaporator, catches, trays, and the like, and better insulation.

Poor and ill-fitting insulation, he says, has caused considerable trouble; it allows for air leaks down the seams and raises operating costs considerably. Warps in doors, too, cause leaks—and Mr. Palmer has had his share of trouble with them, too.

Mr. Palmer finds the NEWS a "nice, bright, breezy paper, interesting to read and full of good tips." He'd like to read more news on insulation, as well as articles giving hints on cabinet designs. He had one fault to find, however.

"Why," he asked, "do you leave out certain information on some machines and include it on others, when you publish the specifications of all machines in one issue?"

(*Answer*: Because manufacturers refuse to give the information requested.)

GUY D'ELSA, refrigeration engineer with John Burns & Co., estimates that about 1,850 cabinets of all makes (household) were sold in New Zealand during the past five years. His biggest complaint against the models sold in New Zealand today is the poor tinning of their shelves.

Mr. D'Elsa divides his time between the design and sales staffs of the Burns company, doing most of his work with commercial equipment. He is a NEWS reader of long standing.

* * *

McAlpine Rebuilds and Services All Systems

Large and important installation and service company in New Zealand is James S. McAlpine, Ltd., refrigerating engineers. The company is headed by JAMES S. McALPINE, and his partner, DESMOND DAVIS.

This company rebuilds and services all makes and manners of refrigeration equipment, stocks replacement parts and refrigerants.

Mr. Davis, in addition to being associated with Mr. McAlpine in the refrigeration business, is also associated with Mayor Davis of Auckland in Hancock & Co., Ltd., wine, spirit, and general merchants, and the largest hotel keepers in Auckland.

New Zealand Executives

Above, left: W. J. Bailey, managing director of Refrigerators, Ltd., talking with Guy D'Elsa, John Burns & Co. engineer; A. D. McRae, also of Refrigerators, Ltd., at right. Above, right: Mr. Bailey (left) with two other Auckland refrigeration executives, W. O. Long, sales manager of Bond & Bond, and J. Russell Hancock, general manager of J. Russell Hancock, Ltd. Lower, left: Mr. D'Elsa atop One Tree Hill with a friend. Lower, right: Refrigeration equipment in the bar of Grand Hotel.

The company operates the Grand, Cargen, Station, Auckland, and Waverley hotels in Auckland, the Grand and Palace hotels in Rotorua, the Commercial hotel in Te Awamutu, and the Commercial and Whangarei hotels in Whangarei.

* * *

Hancock Tells of Setup For Distributing Parts

Leading manufacturers representative in New Zealand is J. Russell Hancock, Ltd., which handles refrigeration equipment for Melchior, Armstrong, Dessau Co., and Brunner Mfg. Co., automotive equipment for Borg-Warner, Weaver Mfg. Co., Thermoid Rubber Co., and British Piston Ring Co., and tires for General Tire & Rubber Co.

J. RUSSELL HANCOCK is general manager of the company, and his brother, L. SYDNEY HANCOCK, manager of the refrigeration department. F. M. THOMPSON and W. R. McKENZIE manage the automotive and tire departments.

The Auckland store is a branch of the company's main office, in Wellington, New Zealand.

The company regularly contacts every wholesale purchaser of refrigeration equipment in New Zealand—household, small commercial, or ammonia. Calls are also made on cabinet manufacturers, local manufacturers, and assemblers of units, as well as on servicing organizations.

"Our schedule," said J. Russell Hancock, "is right through New Zealand, four times a year, a 3,000-mile trip each time. In addition, we also make special trips at various intervals."

Declining to hazard a guess as to the quantity of refrigeration units which will be imported in the near future, Mr. Hancock is nevertheless quite optimistic about the immediate future of the industry in the country.

"At present most refrigerators for domestic use are being imported complete in cabinets," Mr. Hancock said, "but I believe there will very shortly be a development along the lines of local assembly of domestic refrigerators.

"Cabinets may be imported complete, in a knock-down condition, and a New Zealand fabricated liner placed in them—but it is more probable that the whole manufacturing process may be done here.

"At present, the lack of equipment for producing liners is delaying this development, but I do not anticipate it will hold matters up for long.

"Another possibility is that compressors will be made here, under very high tariffs. At present one or two local engineers are struggling to produce compressors, but are not competitive. There is, however, a Labor government in power, which is understood to have ambitions to foster local industry.

"Condensers and evaporators are already being produced successfully in New Zealand. Commercial refrigerator cabinets, ice cream cabinets, and other equipment is also being made here. Importation of such items form a very small percentage of the total consumption."

* * *

Air-Conditioning Sales Are Moving Slowly

Refrigerators, Ltd., is wholesale manufacturer of refrigerated display

(*Concluded on Page 8, Column 1*)

Stedman Gives Salesmen Advice on Selling At Milwaukee Breakfast Meeting

MILWAUKEE—Claiming that approximately 32% of the year's total refrigeration sales are made during the months of April and May, Gerald Stedman, vice president of the Cramer Krasselt advertising agency, enumerated for the 153 salesmen who attended the Wisconsin Radio, Refrigeration & Appliance Association's second breakfast sales meeting held here recently, some of the basic selling principles by which they can make the most of the selling season.

Talking on the "Strategy of Handling People," and "How to Win a Sales Argument," Mr. Stedman first emphasized the importance of preparation before the sale by setting up the M. O. V. U. principle, which stands for: Mobilize selling data and information, organize it, vitalize it, and utilize it.

Three points were given by which the salesman can employ strategy in selling. They were:

1. Be simple.
2. Trade yourself down, prospect up.
3. Develop the technic of the "Yes response."

"The woman initiates and the man decides on purchases," said Mr. Stedman who listed six predominating emotions which prompt a woman to buy: emotional, sensational, imaginative, inventive, imitative, curious.

The rules for winning a sales argument, which were stressed at the breakfast meeting were:

Don't talk to much.

Don't interrupt the prospect.

Avoid a belligerant attidude.

Inquire before you attack—get the prospect to uncover his objections.

Re-state prospect's objections clearly as soon as they are advanced and in the same language used by the prospect.

Indentify your main argument with one key issue and stick to it. Do not digress from this single dominant idea, even if you have to concede minor points.

Anchor Lite Co., Escapes From Fire, Building Collapse & Flood

PITTSBURGH—Since Jan. 23, 1936, a succession of lucky escapes from fire and flood has been the record of Anchor Lite Appliance Co., Crosley distributor here.

On that date, considerable damage was done by the water used to quell a fire two doors away from Anchor Lite, but the fire itself did not reach the water-soaked building.

The buildings that were damaged by the fire, however, collapsed on March 7, and Anchor Lite was forced to move out; again with no damage.

On March 18, the disastrous Pittsburgh flood came up to, but did not seriously damage the distributor's temporary building. The company has now moved into its former quarters at 955-957 Liberty Ave.

Automotive Service Station Finds That Electric Refrigerators Make Good Companion Line

MOBILE, Ala.—Proof that the sale of electric refrigerators fits in well with the operation of an automotive service station is found in the experience of the Quigley Specialty Co. of this city. The concern does a $250,000 sales divided as follows: tires, 33%; volume of business annually, with automobiles, 27%; refrigerators, 16%; radios, 10%; gasoline, 10%; and batteries and accessories, 4%.

"Our diversity of lines enables us to utilize contacts with automobile owners to the best advantage, and also to avoid seasonal sales slumps," states Manager E. E. Delaney. "When a customer buys tires from us he can be approached on the sale of a refrigerator or radio, and when one item is not selling, another can be pushed."

Most of the refrigerator sales are made to customers who have been buying gas, oil, and tires from the Quigley Specialty Co., according to Mr. Delaney.

Its location in a suburban district where parking places are plentiful gives the Quigley Co. an advantage over downtown refrigerator dealers in this territory, Mr. Delaney believes. "When a customer drives in for gasoline," he explained, "she may leave her car standing in the drive and come in to see our refrigerator and radio display. Salesmen are on hand to show her the merchandise, and if necessary, to follow up the contact with a call in the home."

The concern employs 12 full-time salesmen, four of whom sell refrigerators and radios.

310 Sales Made during Camden Show

CAMDEN, N. J.—A new sales record was established when 310 household electric refrigerators, with a retail value of approximately $50,000, were sold during the spring refrigeration exposition sponsored by the Electrical League of South Jersey.

The 1936 figures show a substantial increase over those of last year's spring show when 234 units were sold for approximately $35,000, according to Howard K. Guckling, league secretary.

More than 6,000 persons attended the four-day show, which was arranged by a committee headed by Isadore Borstein, who had assisting him: William Fulton, John Young, James Dwyer, William Polk, Norman Middleton, William A. Major, A. A. Duckett, A. C. Winter, Melvin Ruttenberg, and Ben A. DeYoung.

Mr. Borstein, chairman of the league's refrigeration board, claims the 1936 show to be the most successful ever sponsored by the dealers.

"In addition to the 310 sales which were closed," he said, "the exhibitors obtained, through inquiries, 1,500 prospects, many of whom will buy a refrigerator this year."

500 Units Out of Service After Tupelo Tornado

TUPELO, Miss.—Some 500 electric refrigerators were demolished or seriously damaged in the tornado here April 5, according to estimates by local dealers. About 700 homes were razed by the storm in the best residential section. On account of low electric rates and the activities of the TVA in this city, the electric refrigerator saturation was quite heavy. Tupelo was the first city to get TVA power.

E. R. Chisolm, proprietor of the Chisholm Electric Co., Westinghouse dealer, stated he had $8,000 worth of boxes out on EH&FA paper. The Hall Appliance Co., Norge dealer, reported a like amount, and various other furniture and hardware dealers had installment paper out. The question now is to who will bear the loss. Many of the owners were killed, others were injured, The EF&HA carried no insurance on the boxes.

Mr. Chisolm declared it would break every dealer in town unless the loss was apportioned in some manner. He reported that some of his refrigerators were blown as high as 900 feet by the force of the wind. Others were only scarred, some were undamaged, even in wrecked homes.

Gambill Gives Top Dealers Trips to Crosley Plant

CINCINNATI—For selling 100% or more of their quotas, six Crosley dealers from Tennessee were given a trip to the Crosley factory here last week by the Gambill Distributing Co., Crosley distributor in Nashville, Tenn.

Those in the party included Joe Susman, Lookout Furniture Co., C. S. Green and wife, Lawrence Furniture Co., George W. Neff, W. C. Teas Co., all of Chattanooga; Charles R. Reddick, Storage Battery & Electric Shop, Springfield, Tenn.; Arthur Davis, Smith Furniture Co., Rockwook, Tenn.; and Roy Newsom, Hoover & Newsom Co., Murfreesboro.

Representatives of the distributorship who accompanied the dealers, were: J. F. Blackford, territorial manager of the Chattanooga territory; J. R. Burnett, office manager; and J. R. Koonce, service manager.

Trade Names and Goodwill

Does your trade name mean anything in the refrigeration and air conditioning industry?

Are your salesmen welcomed as representatives of an established concern making a product of known value or do they have to introduce, explain, demonstrate, prove, and leave samples to get each order?

Do your customers boast of the fact that they use your product as a component part? Do they mention it in their literature and advertisements, or do they keep still about it?

Can you get a premium for the quality in your product, or do you have to meet the lowest price in the market? Are your discounts established or do you have to sacrifice your profit to get the order?

Do manufacturers, or distributors, or jobbers, or dealers, or servicemen specify your product by trade name? Or do they buy only because of low price?

Do you strengthen the hand of users and resale customers with advertising to the trade? In other words, what's the true value of your goodwill—in this industry?

If these questions focus on problems which affect your sales program, we will be glad to show you how to use advertising in Electric Refrigeration News.

ELECTRIC REFRIGERATION NEWS

5229 Cass Avenue, Detroit, Michigan

Around the World

With George F. Taubeneck

(*Concluded from Page 6, Column 5*)

cases, and all classes of commercial refrigeration cabinet equipment, as well as radio cabinets.

Companies for which the organization manufactures equipment include Frigidaire, Servel, Kelvinator, Brunner, and General Electric. The company sells at wholesale only, direct to companies which have their own individual sales organizations.

A. D. McRAE is manager of the company, and W. J. BAILEY is managing director.

Air conditioning is moving very slowly in New Zealand at present, Mr. Bailey said. This he attributes to the high installation and operating cost of the equipment, as well as to the fact that the climate is such that it is seldom needed.

Both men find the NEWS very useful and helpful, especially in their study of the American commercial cabinet sales and manufacturing situation.

* * *

Importers & Agents, Ltd. Has 110 Gilfillan Dealers

Distributor of Gilfillan electric refrigerators in New Zealand is Importers and Agents, Ltd., which, under the name of Radio, Ltd., also manufactures and imports radio sets, washing machines, vacuum cleaners, and heaters. M. J. TRUSCOTT is managing director of both companies.

Branch offices of the organization are located in Wellington, Christchurch, and Dunedin.

The company has 110 business houses throughout New Zealand selling radios, refrigerators, washers, vacuum cleaners, and heaters. Practice of the company, according to Mr. Truscott, is to appoint agents or distributors throughout the country to handle its products, leaving the individual companies to handle their own selling organizations.

The company, says Mr. Truscott, did about 27½% of the total New Zealand radio business last year, principally through encouraging its dealers in granting low time payment terms. Most dealers finance their own time payment paper, but the company will back them up in their financing work, when required.

Mr. Truscott reads the NEWS regularly, considers it "an excellent publication."

* * *

Other American Makers Represented Here

Bits about other New Zealand distributors and refrigeration men:

Spedding, Ltd., formerly Majestic distributor in New Zealand, has taken on the Fairbanks-Morse refrigeration line. W. A. BOUCHER is the firm's refrigeration manager.

H. C. Clark, Ltd., distributes Westinghouse refrigeration and Gulbransen radios, with main headquarters in Wellington, and a branch in Auckland, of which J. B. MAUNDER is refrigeration manager.

Fisher & Paykel, Ltd., is Crosley distributor for New Zealand. The firm had an excellent year in 1935, its first in the business.

NELSON JONES AND W. ACKLAND manage National Electric Supply Corp., which handles American General Electric refrigeration equipment; John Chambers & Son, Ltd., is Frigidaire distributor; His Master's Voice, Ltd., in Wellington, is distributor for Norge and HMV (British) equipment.

Walking into Whitcombe & Tombs, Ltd., we expected to find a thriving refrigeration business—the company had been a NEWS subscriber of some standing. We were wrong, though—they are stationers and printers, and operate a magazine agency in New Zealand. Apparently that's why they subscribed to the paper, for the company handles no refrigeration equipment of any kind.

* * *

Air Conditioning Helps Appetite on Australian Voyage

Phosphorescent Nights

Although the South Sea islands were too hot, humid, and dirty to be romantic to this writer, we can make no complaints about the South Seas, as viewed from aboard the *S. S. Mariposa*.

Calm as a grandmother who has successfully reared two broods, smooth as a baby's cheeks, the waters between Honolulu and Auckland provided the shining basis for an almost idyllic existence. Between New Zealand and Australia the turbulant Tasman Sea was supposed to bring discomfort to all of us, but the *Mariposa* maintained an even keel and unperturbed poise throughout.

Here was a typical day for the writer on board the ship: work in the morning; eat a big lunch; don bathing trunks in the afternoon, acquire tan, swim in the outdoor pool, do a bit of deck tennis, punch the bag, and spar a couple of rounds with Leonard Bennett, a welterweight fighter from Detroit, bound for a fight in Melbourne with the Australian champ; shower, dress, and dine de luxe (again at the Purser's table, as on the *Malolo*); in the evening see a recent movie, dance to the ship's orchestra, play a board or two of keeno, engage some of the more interesting passengers in conversation; late at night—watch the large-diameter moon silver the phosphorescent water.

This phosphorescent water business is something you ought to know about. It's as if the sea were covered with a million electric signs advertising Wrigley's chewing gum—with little electric arrows darting around in crazy profusion. Sometimes there's a wide path of moonlight extending clear to the horizon; sometimes the path is broken up into patches of moonsilver, interrupted by areas of those darting arrows of phosphorescence; sometimes the arrows completely supersede the common (or Michigan lake) variety of moonpath. That, ladies and gentlemen, is Moon Magic; and it gets the better of the best of them.

* * *

Air Conditioning on The Mariposa

The *Mariposa's* dining salon was a popular place where passengers lingered long over meals—not alone because the food and conversation were both good and plentiful, but because it was air conditioned. In the South Seas that's definitely a help.

A big 15-ton Brunswick-Kroeschell direct-expansion carbon dioxide refrigerating machine (one of a battery of four—the other three being used to refrigerate the ship's big walk-in food coolers) pumps refrigerant up to a Carrier air-conditioning unit, within which are both refrigerant and steam heating coils plus an air-washing water spray and forced-draft circulation over a filter. This conditioned air is piped up to the dining room. About 25% of the air is recirculated. The oceanic breezes sucked in this unit are unusually clean, so the filters don't have much work to do.

The cabins and staterooms are hooked up to an excellent air-circulating system, but aren't air-conditioned. Wish they had been, for it wasn't easy either to sleep or work in them during a good share of the trip.

* * *

Dramatis Personnae

POLLY MORAN, the American cinecomedian, was the first person we met on the boat. Scarcely had we dropped into our appointed seat at the Purser's table before the lamented MARIE DRESSLER's former running mate plumped over beside us, looking twice as big and eight times as natural as her pictures.

She had had a hard day with her washing, she informed us in a 25-tube auditorium-amplifier voice which nobody but those at the other tables, the crew in their quarters, the captain in his bridge, and the lookout in the observation tower could hear. Furthermore, she Irish-brogued, there were too many sourpusses on this cockeyed boat, and she knew two lovely young girls on board who were just dying to dance, and there was too much damnonsense about dressing up for dinner, and what was I going to do about it all. Without waiting for an answer, she flounced off.

Vieing with Polly in seizing the center of the stage at all available opportunities were the aforementioned pug, a female missionary to the Maoris, an Australian carnival man and his wife who brought with them an ill-assorted collection of American sideshow freaks (including an eight-foot-tall negress who sang blues songs in the SOPHIE TUCKER manner, only louder).

Among the more interesting people were PETER SLOANE, wealthy young Australian from a sheep station near Melbourne, who told us a lot about wool—Australia's chief industry; ALAN FOSTER, an American pianist with middlesex mannerisms and the readiest, most explosively funny wit we've encountered in years; B. G. LINDRUM, smooth Australian billiard champion; JIMMY MOLLISON, the famous flyer; PEGGY KENT, knockout daughter of SIDNEY KENT, banker-president of Fox Films; the Kresge heiresses, Anne and Catherine, from Detroit; GAY SEABROOK, Broadway and Hollywood actress whom you've probably seen in pictures featuring WILL ROGERS or SPANKY MACFARLAND, and who was headed for Melbourne to play in "Three Men on a Horse"; JONATHON HOLE, BETTY HANNA, LOUIS TANNO, and FREDDIE SHERWIN of the same company; and captain MADSEN, father-in-law of C. E. NOLAN of the Hawaiian Electric Co., making his first trip in a decade over the waters on which he used to skipper the best boats. What stories he could tell! There were also nine missionaries aboard, representing various religious denominations. Three of them were Mormon boys from Salt Lake City, headed for Melbourne to bring the Christ of the Western World to Australia. Like all Mormon missionaries, these young men *pay their own expenses* during their three-year sojourn in a foreign land. Afterward they will return to America to take up normal pursuits. They had physiques like professional football players, and were as friendly and likeable as collie dogs—in marked contrast to the other missionaries aboard.

* * *

The Prizefighter and The Pianist

The prizefighter was right out of a DAMON RUNYAN or H. C. WITWER or RING LARDNER short story. His dese - dem - dose - and - da conversation would have been amusing, had there not been so much of it. He also insisted on singing.

Knowing the words to practically everything ever written—but the tunes to nothing—he interjected himself in a grinning and friendly fashion into every songfest. Which was too bad, for Miss Seabrook, Mrs. Lindrum, and a 250-pound Hawaiian girl named Mary were talented vocalists.

But strangely enough, the effeminate pianist had his number, and took great delight in chasing the boxer away with barbed witticisms and stinging rebukes at every opportunity.

Nobody else had the nerve to do what this underdeveloped pianist—whom the boxer could have mangled in less time than it took KING LEVINSKY to decide he didn't want any more of JOE LOUIS—did with finesse and dispatch time and again.

* * *

What Happens to Bankrupt Dealers

My cabin steward, FRED WINTERBON, turned out to be an ex-radio dealer from Oakland, California. He did well working under the Chanslor-Lyon distributorship up to 1930, when business began to fade.

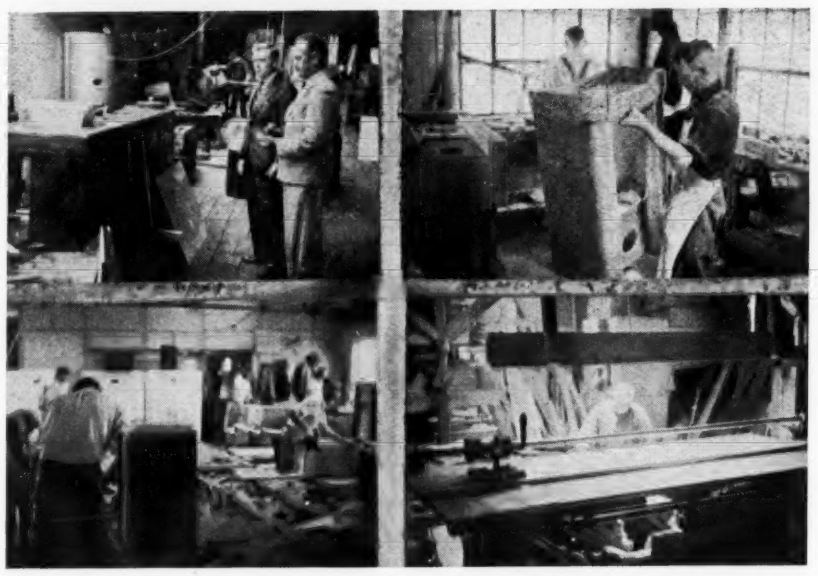
What put him out of business was the failure of manufacturers to rebate him when they slashed list prices in 1931 and 1932. With a sizeable stock on hand, purchased at prices higher than these revised list prices, he went under.

After selling his home and his insurance to pay his debts, he obtained this job on the Matson line, which consists of making beds, cleaning up, bringing in apples and oranges and ice water, and looking after the personal needs of specified passengers.

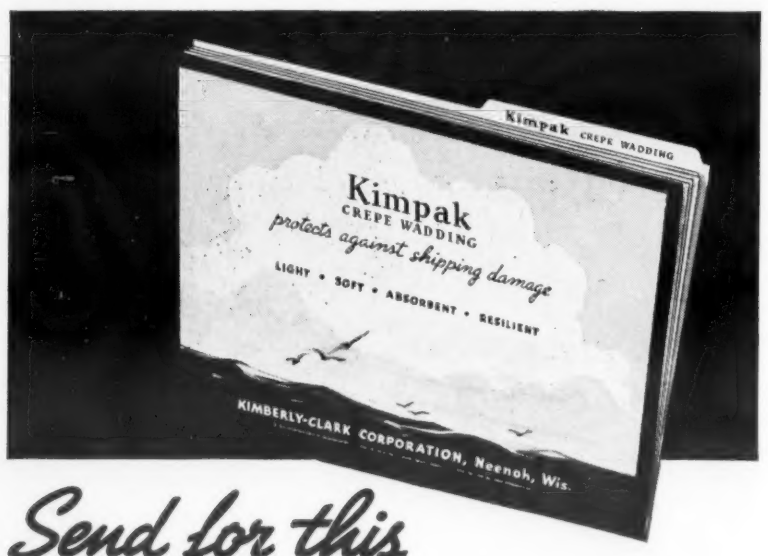
Naturally he received a bigger tip than was contemplated.

For the benefit of those who might want to make a trip like this, it should be noted that tips on a two-weeks' boat ride—the minimum consistent with decency and regard for services rendered—run between twenty and twenty-five dollars. They include your waiter, cabin steward, deck steward, bath steward, and bellboys.

Manufacturing in New Zealand



Manufacture of refrigeration equipment is not extensive in New Zealand, but some cabinets are made there. Upper left is the cabinet plant of Handleys, Ltd. The other three shots show the factory of Refrigerators, Ltd., makers of commercial refrigeration cases and radio cabinets.



Send for this

FREE 1936 ILLUSTRATED PORTFOLIO OF

Kimpak
REG. U.S. PAT. OFF. & FOREIGN COUNTRIES
CREPE WADDING

Learn how hundreds of foremost manufacturers use economical KIMPAK to guard products against all kinds of shipping damage

● KIMPAK is a soft, resilient crepe wadding that comes in rolls, sheets, and pads of various thicknesses. It is free of dirt, grit or other foreign substances. KIMPAK protects fine finishes, minimizes breakage during shipment. It gets your product to your customers in perfect condition.

Because it is easily applied, KIMPAK saves time, labor and money in packing or package protection.... Send today for your copy of the new "1936 Portfolio." Please make request on your letterhead, and address nearest office.

KIMBERLY-CLARK CORPORATION
NEENAH, WIS.
8 S. Michigan Ave., Chicago 122 E. 42nd St., New York City 510 W. 6th St., Los Angeles

● THE superior performance of each COPELAND Commercial Unit is the direct result of unusual experience and unusual manufacturing facilities. Most of the Copeland features which assure smoothness, stamina and long-life are not visible. They can only be detected by scientific gauges and instruments which disclose ultra split-hair measurements. Such skilled manufacturing is beyond the ordinary and place Copeland far ahead in quality and performance. Sell this fine line. A few territories are available. Write, today.

COPELAND REFRIGERATION CORPORATION
Manufacturers of a complete line of Household and Commercial Refrigeration
Holden Ave. at Lincoln . . . DETROIT, MICH.

Copeland
COMMERCIAL
REFRIGERATION

Copeland
DEPENDABLE Electric REFRIGERATION

Chicago Westinghouse Distributor Sees New High Household Sales Marks As Soon as Weather Warms

By T. T. Quinn

Household refrigerator sales in Chicago are going to new high marks this year, in the opinion of H. A. Malcom, manager of the refrigeration department of Westinghouse Electric Supply Co.

How come? Distributor-to-dealer sales this year have been excellent, but dealer sales have not been nearly so good. Mr. Malcom admits that. Whence, then, comes his optimism?

"Dealers are optimistic this year—more so than I've seen them in a long, long time.

"Certainly, their sales thus far haven't been much to crow about. For one thing, the weather's been dead against them. It's a tough job to talk mechanical refrigeration, convincingly, in sub-zero temperatures.

"But the dealers are buying heavier than they have for years. Most of the ones I've talked to are all pepped up—they believe it's going to be a wonderful year.

"And when your dealers believe that, you can go right out and bet the first fellow you see that it *is* going to be a good year. The dealers will make it one.

"Dealers are reporting better conditions in their neighborhoods. Men are working, families have money to spend again; some of them after a three or four-year lapse. Most of these people have wanted refrigerators for a long time; now, they're going to buy them.

"I don't know who started it, or how it got started—but somehow the feeling has gone around: 'This is the year!' Dealers really believe it; and they're getting set to handle their share of the business they are confident is going to come.

"Even the cold weather hasn't discouraged them. Most years, you'd hear a howl go up to high heaven if weather conditions delayed warm weather this long. That isn't true this year.

"These men, most of them, have been in business in their territories for years. They sense a big upswing this year—and what they're thinking about now is not when the season will start, but whether they're prepared to get their share of the business that will come eventually.

"Delay, right now, doesn't bother them. All it means, to them, is that they'll have to work faster and harder, for a shorter period of time. But they believe the business is there, and that it's up to them to get it. They believe this will be the best refrigeration year they've ever known.

"That's why they've been getting their stocks into shape during the unfavorable weather. They want to be ready for the rush, when it comes. And there isn't a single doubt in their minds that it *is* going to come."

The company has taken care to see that a good share of this business comes its way. Early last fall, a series of dealer training schools was inaugurated, to give them the Westinghouse story, and equip them with sales ammunition for the year ahead.

"You see," Mr. Malcom said, "there are very few 'exclusive' dealers in Chicago. Most of them handle at least two lines, often three or four. In a case of that kind, the company in which the dealer is best trained gets the business.

"We have found out that, in general, a dealer will favor a line in his sales work for one of three reasons:

"1. The customer asks to be shown it.

"2. The dealer can make more money with it than with the other lines he sells.

"3. The dealer knows the selling points of the line better.

"In the first instance, the customer who asks to be shown a certain line is usually one who has been influenced by newspaper advertising. Often the influence is built around price, in which case our units, which are, most of them, in the higher price range, do not enter.

"We have built our appeal to the dealer around the other two points—namely, that he can make more money selling our line, and that he knows better how to sell it.

"To accomplish the first point, we have maintained a strict price structure, at times when such a practice often meant losing sales. We insisted that dealers sell Westinghouse refrigerators at regular list prices, regardless of what competition was doing.

"We 'shopped' our dealers regularly during the busy season—and called them on any indication of price cutting that came to our attention.

"Consequently, before the season was over the dealers began to realize that our no-price-cutting policy was working to their benefit as well as our own; that when they sold one of our units they were making their full profit; that, whatever they had to do with other lines, they didn't have to 'chisel' with ours.

"This made them feel friendly toward us. When a prospect expressed no preference as to make, the chances were all in favor of their talking Westinghouse.

"Last fall, we decided to arm the dealers with another point in our favor—more information about our line. We called all dealers in to a series of training schools, at which all the selling points of the new line were gone over carefully. Our object was to teach them more about Westinghouse features than they knew about any other line.

"Now we believe our chances are even greater than before. The dealer and his salesmen, knowing more about our line, will naturally be more willing to introduce it—because they can talk it intelligently. And when a salesman starts playing up the good points of one line it's hard for him to switch to an equally good argument for a competing line without losing face before the prospect."

The company has started to push sales of all-electric kitchens this year, harder then ever before, but this activity is coming along rather slowly. Few all-electric kitchens will be sold in one job, Mr. Malcom thinks. It is, rather, a job of education—with most sales being of the "piece by piece" variety; first the refrigerator, then the range, then the other appliances.

Range sales have been disappointing, principally because of the rate problem; cost of current is so high as to make ownership of one almost prohibitive at present. However, Commonwealth Edison Co., with the cooperation of local distributors, is making a survey of the situation, and lower rates are anticipated.

Distributor Says Crosley Is Chicago Barometer

"The best barometer of refrigeration business in this town is Crosley," said one competing Chicago distributor. "If Crosley isn't doing anything, nobody is."

Chief reasons for this, we found, are two: Crosley has more dealers in the city than any other distributor—about 150; and the company's lower unit prices are an added inducement to prospective purchasers, even when the weather is unfavorable to volume sales.

At Crosley Distributing Corp., which handles the whole Chicago metropolitan area, there was a spirit of guarded optimism—as though officials, while eminently satisfied with current results, didn't want to do anything that would break the "charm."

"Sales for the first three months have been so good that we don't even like to talk about them—it would sound too much like we were bragging," said B. J. Schwinn of the distributor's staff.

Although he didn't say just how much better this year's sales were than last year's, Mr. Schwinn intimated that they topped 1935 sales, themselves record-breakers, by a goodly margin. A larger percentage of this year's business, it was also noted, is being done in the larger-size, higher-priced models—indicating that conditions are picking up all along the line.

Crosley's new hermetic units are enjoying a great share of popularity this year, Mr. Schwinn reports.

He doesn't think the five-year guarantee a big factor in making sales.

"If a person has made up his mind to buy a certain make of refrigerator," he says, "the guarantee doesn't make so much difference.

"It might have, before everybody put one on his machine; but now, the only effect a guarantee has is to make them all alike—and as far as sales are concerned, that means practically nothing."

Eventual end of the guarantee movement, Mr. Schwinn believes—and hopes—will be a gradual slackening off of these restrictions and an ultimate return to shorter warranty periods of, say, one year.

The distributor handles all the installation and service work for all its dealers in the Chicago territory. Dealers are not required to keep any extra models on hand. They stock up with a complete line of units for floor display purposes—and their strict buying activity is done.

As soon as a sale is closed, and the name's on the dotted line, the dealer phones the branch office—and a brand new unit is started on its way to the new owner's kitchen. The distributor does a strictly wholesale business with the exception of apartment house installations, which it handles direct only because this activity requires a special kind of selling, and margins are usually shaved so close as to make them prohibitive for dealers.

The company keeps a visible index record of all installations made in the city. This index is complete, giving information at a glance on size of unit, price, name of owner, dealer making the sale, address of owner, and number and date of service calls made, together with the adjustments required. The cards are divided by street addresses in the city.

In this way, the distributor can tell at once the "vital statistics" on every unit it has installed in the city, how old it is, who sold it, and how it is performing.

For example, Mr. Schwinn pointed out from among the hundreds of cards in the index a set of several in the same block, purchased at very nearly the same time, but from several different dealers.

"This system gives us a good checkup on why buyers happen to buy, as well as when they buy," he said. "Here, for example," pointing to the cards mentioned, "are four refrigerators, almost next door to each other; each of them sold by a different dealer.

"If they had been sold by the same dealer, we'd be pretty sure that canvassing had turned the trick; but, since the purchasers each went to a different dealer, it's fairly certain that the sales resulted from a satisfied user.

"In other words, Mrs. Jones here bought her Crosley first; and in her satisfaction and pride of ownership she called in several of her neighbors to look at it, and told them how well it was performing. These neighbors happened to be thinking of buying refrigerators—and her satisfaction with her Crosley did as much as anything else in swinging the sale.

"Each of the others went to a different dealer to buy—but they all bought Crosleys."

Mr. Schwinn wasn't particularly sorry to see the FHA go, as far as household sales are concerned. In his opinion, its value was greater in the larger-size sales, such as commercial installations. Drawbacks in the household field were almost equal to advantages, he thinks.

"One good thing FHA did do was to bring down finance rates on appliance sales," he said. "I think that was coming of itself, anyway—but FHA did hurry it along. Most finance companies now have rates equal to those that FHA fostered.

"A good many of our dealers used FHA, and it helped their sales.

"One thing against the movement, though, was the large number of 'fly-by-night' dealers it brought into business—dealers who never would have been in operation except for FHA, and who used its benefits to put over a lot of deals that never would have been permitted under ordinary conditions.

"These dealers got into the business, and made things tough for the regular dealers—cutting prices, shoddy trade-in practices, and things of that sort. You can't hold FHA strictly responsible for all of these things, but it did make possible conditions which encouraged them."

The company has also been experiencing a good deal of success with the new Sav-A-Maid washer and ironer line which Crosley introduced for the first time this year.

One valuable thing which the line makes possible for dealers, Mr. Schwinn thinks, is an all-year-'round business—fewer peaks and dips in the sales curve. Sales so far this year have been quite encouraging, he says, despite the fact that there is a lot of competition. A noticeable—and encouraging—feature has been the number of Crosley refrigerator dealers who have added the line, dropping other washer lines to do so.

"Several dealers have told us they are doing it because they want to handle an all-Crosley line—refrigerators, radios, and now washers and ironers," Mr. Schwinn said. "They say it adds strength to their sales stories."

The company is just starting a new sales scheme on its washers and ironers—putting them out in apartment buildings on quarter meters, for the use of tenants. From the way things are starting out, this should prove a worthwhile move, Mr. Schwinn says.

Demand for Higher-Priced Norge Models Reported

At Sampson Eelectric Co., Norge distributor for Chicago and northern Illinois, Manager L. U. Kemph of the heating, ventilating, air-conditioning, and contract divisions reported an overwhelming demand on the part of dealers (and presumably buyers) for higher-priced models.

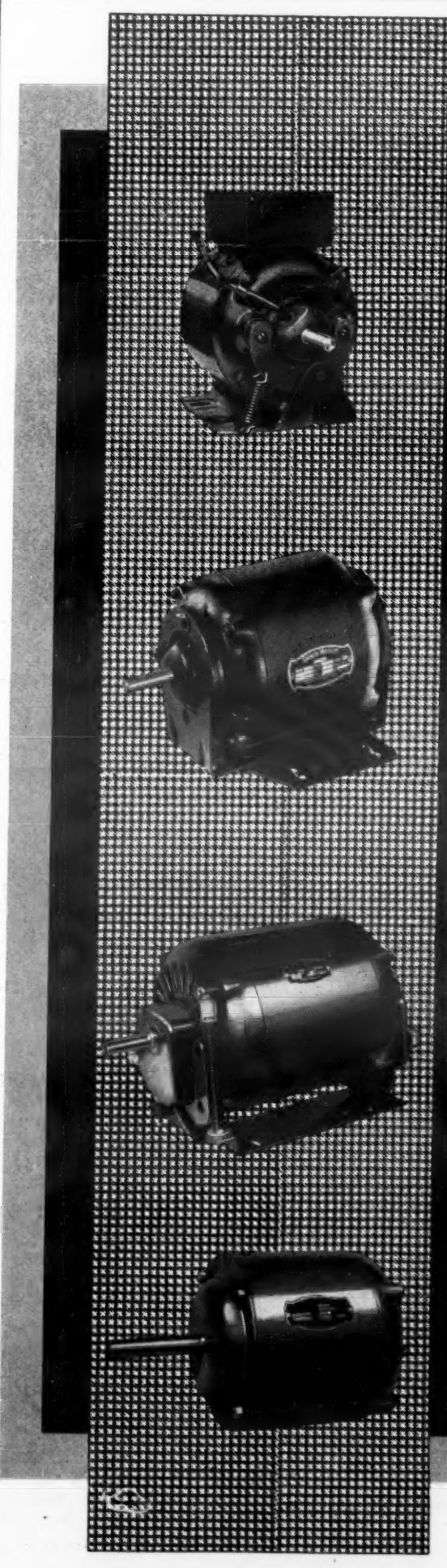
"Six and 7-cu. ft. models are selling best, as far as we can judge from our sales to dealers," he said. "A peculiar thing, this year, is that the higher-priced models are most in demand throughout the territory. This goes for refrigerators, ranges, and washers.

"All the way down the line, dealers are buying the bigger, more expensively appointed models."

A much larger percentage of sales than usual are in the larger, porcelain-finished models, Mr. Kemph said.

"This is due to one of two things. Either the dealers have finally got the 'quality' story we've been trying to tell them for several years, and are trying to go after the larger profits in the sale of higher-priced models; or else prospects have more money to spend, and are demanding the larger size, higher-priced units in preference to the lower-priced ones, with fewer convenience features.

"At any rate, whether the dealers or prospects are doing the leading, the results are apparently good—for the dealers are coming back for more."



Delco motors

The reason for the outstanding performance of Delco motors can easily be seen by recalling the many exclusive, patented features which Delco pioneered in the motor-building field: The non-spillable end-head that provides Sealed Lubrication; the rubber cradle mounting that absorbs vibration; the cork thrust-cushion that eliminates end-play noise; the automatic belt tightener—and others. These Delco developments provide real tangible values that make Delco motors the choice of wise appliance manufacturers—that insure to dealers the satisfactory operation of the appliances they sell.

DELCO PRODUCTS CORPORATION
DAYTON, OHIO

Made in Canada by McKinnon Industries, Ltd., St. Catharines, Ontario

ELECTRIC
REFRIGERATION NEWS

Registered U. S. Patent Office
Copyright, 1936, Business News Pub. Co.
Published Every Wednesday by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich.
Telephone Columbia 4242.
Cable Address: Cockrell—Detroit

Subscription Rates
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: $3.00 per year; 2 years for $5.00.
All other Countries: $5.00 per year.
Notice: Please do not pay money to strangers claiming to represent this paper. We employ no subscription solicitors. Send orders and remittances by mail.

F. M. COCKRELL, *Publisher*

GEORGE F. TAUBENECK, *Editor*
PHIL B. REDEKER, *Managing Editor*
THEODORE T. QUINN, *Assistant Editor*
FRANCES MCNAMARA, *Assistant Editor*
K. M. NEWCUM, S. L. POTTS, and J. J. MURRAY, *Contributing Editors*

GEORGE N. CONGDON, *Business Manager*
ROBERT P. NIXON, *Asst. Business Mgr.*
HELEN K. GILMORE, *Asst. Business Mgr.*
R. T. CARRITHERS, *Spec. Representative*

JOHN R. ADAMS, *Production Manager*
JEAN H. ADAMS, *Subscription Manager*
LOLA E. DEW, *Circulation Manager*
WINIFRED MERSON, *Spec. Representative*

Member, Audit Bureau of Circulations
Member, Associated Business Papers

VOL. 17, NO. 18, SERIAL NO. 371
APRIL 29, 1936

Better Buymanship

HOUSEHOLD REFRIGERATORS is the subject of booklet No. 19, one of a series issued under the general title "Better Buymanship" by the Research Department of Household Finance Corp., 919 North Michigan Ave., Chicago, Ill. The publication of this literature for consumers appears to be in the nature of institutional advertising for the finance company since the price charged for the various bulletins (2 for 5¢), obviously covers little more than the cost of postage.

According to the order blank enclosed with the booklet just received, "the Better Buymanship booklets bring together from reliable sources impartial information on buying commodities of every day use in the home. They show *how to distinguish quality, how to judge price,* and how to buy with true economy."

While the above claims may be somewhat exaggerated insofar as the 20 pages of information on household refrigerators are concerned, it appears evident that the author (Mrs. Carol Willis Hyatt) has made a sincere and intelligent effort to obtain data from "reliable sources" and to present "impartial information."

A Welcome Relief From Consumers' Research

The advice offered to prospective buyers of refrigerators by this company is certainly a welcome relief from the blatant cocksureness of Consumers' Research, Inc. of Washington, New Jersey. The contrast is so marked that we are moved to summarize our impression of Better Buymanship as we did in the case of the first bulletin on refrigerators issued by Consumers' Research.

After reviewing the "confidential" advice on electric refrigerators issued by Mr. Schlink's organization (published in full in the May 18, 1932, issue of the NEWS) we said: "It looks like *a good idea gone wrong.*" The booklet issued by Household Finance Corp., we are pleased to say, *looks like a step in the right direction.*

Even though it appears that the author has "leaned over backward" in her desire to be fair to all types of refrigerators, and regardless of some questionable conclusions arrived at by the author, we believe that the work deserves much credit as a constructive effort to give practical help to a confused public.

Perhaps mention should be made of the fact that credit is given in the booklet to the publisher of the NEWS as one of the sources of information, along with 18 other individuals who were interviewed. Four issues of the NEWS are also listed among 18 references to publications which were consulted in gathering material. This may suggest that our attitude toward the booklet may be strongly influenced by our own conceit.

The fact of the matter is that the publisher of the NEWS was mildly annoyed by several of the questions propounded by the interviewer. Never having heard of the "Better Buymanship" booklets and suspecting that the proposed advice to consumers would be as valueless as Consumers' Research, he frankly begrudged the time being given on a very busy day to a strange woman who seemed to know nothing whatever about refrigerators but whose curiosity was appalling.

It therefore seems fair to say that whatever information Mrs. Hyatt obtained from personal interviews must have been secured from the other 18 individuals listed. (If the lady sees fit to pay us another visit, we will try to give her more information.)

What Does the Refrigerator Buyer Need to Know?

The booklet attempts to answer the question "What does the purchaser need to know about refrigerators?" Mrs. Hyatt opens the discussion by answering that question with the following generalization:

"A satisfactory refrigerator must provide adequate food protection at the lowest possible first and operating cost."

Performance, cost, and *durability* are given as the principal points which must be considered in making an intelligent selection from the various types and makes on the market.

The analysis of the factors to be considered in comparing ice, electric, gas, and kerosene refrigerators is presented quite clearly. The prospective buyer who is intent upon getting "his money's worth" will certainly learn a lot more about refrigerators after studying this booklet than he would learn from anything which we have seen that was issued by Consumers' Research.

How Can Prices Be Compared?

Better Buymanship stepped off into deep water, however, when it came to the question "How can prices be compared?" If the prospect tries to solve that problem, we fear that he will be just about as helpless as if he had never read the booklet.

If advice or information on that subject is going to do the buyer any good, presumably it should enable him to determine that a certain make and model priced at, say $200, is really a better refrigerator than a competitive model of the same size offered at $225. Or, the information he has acquired should enable him to pick up a bargain offered on a side street in preference to paying the regular price demanded by a long established and highly reputable main street store.

If he has to fall back upon the reputation of the manufacturer (built by national advertising) and the reputation of the local dealer (whose well-stocked, high-rent store proclaims that he must be making money out of the business) and if the prospect finally has to depend upon the price tag in order to be sure which is the deluxe and which is the standard model, then it would seem to us that he might as well have depended upon these evidences of quality in the first place.

Why Has the Public Lost Confidence?

It is a rather sad commentary on present day standards of business morality that the public has lost confidence in the integrity of local dealers. There must be something radically wrong when the housewife has more faith in the advice of strangers in a distant city than she has in the advice of a home-town merchant. It is that condition which has offered the opportunity for propaganda organizations like Consumers' Research to flourish.

We do not believe, however, that the local dealer is entirely to blame for his present predicament. The shortsighted public is equally responsible for the situation, in our opinion. We have only to trace the history of certain consumer buying habits to see how the present conditions developed.

Bargain Hunting Housewives

For example, consider the housewife as a *bargain hunter.* Over a period of years housewives acquired the idea that they could save a lot of money on their household budgets by becoming *smart* buyers. The net result of that craze was to put the old fashioned dealer out of business. The chain store with its leaders and specials, cut-price drugstores, and department store bargain basements gradually supplanted the merchant who stocked only reliable merchandise, took full responsibility for any defects, and was always prepared to protect the consumer against poor quality.

In actual practice, of course, the dealer depended upon his *wholesaler.* The latter was a buyer of a sufficient volume that he could force the manufacturer to make good on all quality claims. Thus the consumer bought only from reliable dealers, the dealers bought only from reliable wholesalers and wholesalers bought only from reliable manufacturers. The quality chain was complete. The second-rate manufacturer could only sell to the second-rate wholesaler and he had to depend upon second-rate dealers. The second-rate dealer catered to the second-rate trade.

In those days the consumer knew where to buy first-class merchandise. But the "carriage trade," as it was known in those days, *expected to pay a fair price* and took pride in its ability to do so.

Modern Methods Produce Appearance of Quality

Another entirely different chain of events also has had a profound effect upon present day buying problems. Technical developments in manufacturing processes have made it possible to produce all manner of goods with a *quality appearance.* Time was when cheap merchandise *looked cheap.* A man could distinguish a cheap suit of clothes as far as he could see it. A woman could guess the price of a hat half a block away. Low grade furniture looked the part. A business man could point out a well constructed building from its exterior appearance. Any mechanic could distinguish good machinery from a piece of junk.

In recent years, the tricks of production have multiplied to such an extent that laboratory tests made by highly skilled technicians are necessary to determine the relative merits of many competitive products. This is true not only of manufactured goods but it even applies to farm products. The good old honest farmer has learned how to grow fruit and vegetables having the *appearance* which formerly denoted the desired taste and nutritive qualities.

Of course, advertising may also be blamed for the present difficulty. Messrs. Chase and Schlink and numerous other ambitious writers have appraised the public of the sins of advertisers. They, too, have learned how to make shoddy goods look attractive. No doubt national advertising played its part in breaking down the morale of the wholesalers and the dealers, as well as confusing the public, on the subject of quality.

But we might as well face conditions as they are and try to devise ways and means of educating the buying public to keep pace with technical progress. There is little use in wasting time trying to place the blame. Smart manufacturers, smart dealers, and smart housewives have all contributed to the decline in confidence. Even our smart government has lent its influence to the disturbance.

Therefore we believe any sincere and *intelligent* effort to educate the public "to distinguish quality, how to judge price, and how to buy with true economy" is *a step in the right direction.*

Letters

Rates News as Impartial Authority of the Industry

Lucas-Kidd Norge Co.
140 North Main, Anderson, S. C.
We Service All Makes
Electric Refrigerators and Radios

Editor:

We enclose $1 for which send us four extra copies of the Specifications issue which will make its appearance April 22.

We consider your publication the impartial authority of the industry, and as far as we are concerned it is the "final judgment" in spite of what is quoted by this man or that man, Consumers' Research, government tests, and all the rest. So you sort of represent the "army of occupation in the neutral zone"—and we anticipate the arrival of this next issue of the ELECTRIC REFRIGERATION NEWS.

To our way of thinking, there never was a time like now when Mr. John Public ought to know something about the kind of electric refrigerator he should buy. With filling stations, drug stores, mail order houses, itinerant agencies, and fly-by-night companies that blossom out every year about this time, and fade away with the autumn leaves, we are inclined to believe that there is still a place in the sun for the man who *knows the difference* and knows how to tell it to his prospect.

As a dealer who is in his fourth selling year of one of the leading makes, we would like to hear from other dealers who expect to stay in business conducting same along sound lines and sane principles. Now that low down payments, 30 and 36 months are being offered the class of credit risks that annually make instalment selling more and more hazardous, doesn't it behoove some Moses to start leading us out of the wilderness? Well, we think so! H. R. KIDD, Sales Manager.

Answer: We have been rather skittish about permitting anybody to put the mantle of Moses on our shoulders, particularly in this rip-snorting industry. You will be interested, we believe, in an editorial in this issue in which we have discussed some of the problems of the buying public, with mention of Consumers' Research and other such manifestations of the cock-eyed condition of the public mind.

A Return Trip to Dallas

Tom Sawyer
800 Blaylock Drive, Dallas, Texas

Editor:

I am wondering if you have returned "home" from your trip, have delayed this letter not knowing just when Detroit would welcome you back.

Want to thank you for those kind words expessed about the writer in your issue of Feb. 5 that came off the press after your visit to Dallas, the nice things you wrote about our city are also appreciated and its inspiring words such as those that makes the boys on the firing line in the refrigerator field have the desire to go right on to the front.

You may be interested in knowing that Electric Household Appliances, distributor for General Electric, through the efforts of your old friend Dick Richardson are working on the matter of having 10 of their leading men take subscriptions to your paper. I am looking forward to the receiving of my first copy.

Should your travels in the future take you in the vicinity of this "here town" look us up again.

TOM SAWYER.

We are receiving REFRIGERATION NEWS regularly. Would appreciate having our name appear on your Catalogue Mailing Service, for which please accept our thanks. Can we be of any service to you in this territory?—Rockaway Refrigeration Co., Inc., 223 Beach 116th St., Rockaway Park, L. I., N. Y.

Wisconsin Test Questions

Manson, Ia.

Editor:

My attention was called to an article in your ELECTRIC REFRIGERATION NEWS, issue of March 25, 1936, reporting tests on various refrigerators. I am enclosing a 10 cent stamp for which please send me this issue.

I would appreciate very much if you can give me any information regarding the reason for the decreased efficiency of refrigerator No. 10 in subsequent tests after the first test. I guess that's not very well stated, but you understand what I mean. I do not believe that is characteristic of this make; at least I should like very much to know if it is.

I would also greatly appreciate if you will identify the makes corresponding to the different numbers in this report. RUSSEL VIRT.

Answer: See below.

Smith Electric Co.
Bloomington, Ind.

Enclosed is our check for $1.25 for four extra copies of your NEWS containing specifications of household electric refrigeration and an extra copy of the March 25 issue.

In the March 25 issue I read with interest the reports of the University of Wisconsin tests. I would appreciate your sending me a list of the manufacturers names to indentify the various refrigeration numbers.

Last year I wrote a Thesis for a Master's degree at Indiana university, and I made some extensive tests on the controls for household electric refrigeration. I am very much interested in comparing your test data with some of my observations. Of course, your tests are much more complete since my direct interest was only in the controls.

GEORGE H. SMITH.

Answer: See below.

Wictors Hardware Co.
Radios, Plumbing and Heating
Remsen, Iowa

Editor:

We received your two editions, which we ordered from you, containing the graphs illustrating the comarative operating costs of various refrigerators, as found in experiments, as conducted by the U. of Wisconsin, for which we thank you.

However the graphs failed to illustrate, the make of the various refrigerators, listing them merely as 1, 1d, 2, etc.

We wonder if you would be kind enough to mail us a listing of the refrigerators by name, to enable us to identify them. G. S. WICTOR.

Answer: We have no official information as to the makes of the refrigerators tested by the University of Wisconsin Electrical Standards Laboratory, and suggest that you write to Prof. Royce Johnson of the University of Wisconsin for additional information regarding these tests.

Operating Cost Averages For Dealers

Editor (Confidential):

I am thinking of investing some money in an electrical refrigerator shop and am writing to ask you if I can obtain somewhere a table of percentages showing what the shop can afford to spend in the way of rent, how much for light, heat and power, how much for wages, etc.

I realize of course, that these percentages will vary considerably in different places, but what I want now is something that will be approximately standard the country over.

Answer: In the Dec. 4, 1935, issue of ELECTRIC REFRIGERATION NEWS was a complete report of the Dun & Bradstreet survey of the operating average of 44 electric refrigerator dealers.

This report gives the tabulated records of the cost percentages for wages, light, rent, etc.

News Copies Lost in Flood

Cumberland, Md.

Editor:

Thanks for forwarding me the copy of REFRIGERATION NEWS of March 18. I do not like to miss an issue.

Undoubtedly the regular issue was lost in the mail, for service was practically at a standstill at that time due to floods. Here, our postoffice was under the water, and mail only came from the East by trucks.

JOHN H. ROEDER.

Enclosed please find three dollars ($3.00) for a year's subscription to your ELECTRIC REFRIGERATION NEWS. It's a fine magazine and I'll look forward to absorbing it from week to week. I am completing Refrigeration at U. E. I. in Chicago and am enclosing my card. Wish me luck.—Ben Morris, 12008 Eggleston Ave., Chicago, Ill.

The enclosed $3.00 money order is for renewal to your interesting publication.

I believe my subscription expires April 30 but want to get the renewal notice in so as not to miss an issue.—Walter A. Klein, 4248 Juniata St., St. Louis, Mo.

Air Conditioning

Great Increase Seen For Air Conditioning In San Antonio, Tex.

SAN ANTONIO, Tex.—With the 1935 air-conditioning load five times that of 1934, the San Antonio Public Service Co. has taken the number of installations already started this year as a sign that 1936 will see an even greater increase in air-conditioning installations in this city.

Two more operating rooms of Santa Rosa Hospital here will be air conditioned as the result of an experiment last year in which a system was installed for three such rooms.

Frank Brothers Clothing Store, where air conditioning is being installed now, will be the first completely air-conditioned men's clothing store in San Antonio.

Plans are also being completed for four air-conditioned residences to be built this year.

Complete installations have only recently been finished for St. Anthony Hotel and Walgreen's new drug store.

Thirty air-conditioning installations in 1935 involved the expenditure of approximately $240,000, and added a total of 996 hp. to the electric load, according to the utility.

These instalations brought the total air-conditioning installations in the city to 90, with total capacity of approximately 6,000 hp.

Operating Cost Obtained On Air Conditioning In Jewelry Store

BOSTON—Data on the power consumption of a summer air-conditioning system have been compiled on the installation in a local jewelry store here which measures 20 ft. wide and 60 ft. long, and has a capacity of 14,400 cu. ft.

The air-conditioning system, in use for two years during the summer months only, used 12,901 kwh. of electricity for cooling and dehumidification, using recirculated air only, since no outside air connection is provided.

Two 3-hp. Frigidaire compressors, located in the basement, supply the cooling, and the air is treated by a suspended-type unit system, using two ¼-hp. fans, on the street floor.

Operating figures on the installation follow:

Hours of operation (2 years)	1,945
Maximum demand, refrigerating machines, watts	6,240
Maximum demand, fans, watts	400
Total demand of system, watts	6,640
Electric energy consumption, (2 years) kwh.	12,901
Maximum condensing water temperature, °F.	76.5
Average condensing water temperature (June-September) °F.	70.9
Estimated consumption, condensing water (2 years) cu. ft.	164,676
Approximate refrigeration capacity, tons	8

Birmingham Dept. Store to Install Conditioner

BIRMINGHAM, Ala.—The Parisian, Inc., local department store, has contracted with Fletcher-Shook Supply Co., for the installation of a Carrier air-conditioning system, William Holiner, company president, announced.

In anticipation of increased business, the Parisian has remodeled and enlarged several of its departments, and added a line of General Electric radios, refrigerators and washers.

Trane Opens Addition To Plant; Increase in Shipments Planned

LA CROSSE, Wis.—Marking the completion of the new 20,000 sq. ft. addition to plant No. 2 of the Trane Co., manufacturer of heating and ventilating equipment here, Reuben N. Trane, company president, was host April 11 at a buffet luncheon for company employees, held in the new building.

The factory addition was constucted to provide increased facilities for the manufacturer of large air conditioning units, some of which exceed 30 tons in weight.

Through the addition of the new factory unit, Mr. Trane told his employees, the company expect its increased production will permit the shipment of an average of 400 tons of equipment each month.

Employe Organization Started at Trane

LA CROSSE, Wis.—With the ultimate goal of increased production, Trane Co. officials used the opening of a new factory addition as the occasion to announce the inception of an employe organization, which aims to promote cooperation and good fellowship among the workers.

The fact that the number of Trane La Crosse employes, the number of sales representatives, and the gross number of tons set up as a quota to be shipped are nearly alike was used as a basis for promoting an interest in the welfare of the entire organization among the Trane employes.

Natkin Opens Branch At Des Moines

DES MOINES—Sixth branch of Natkin & Co., distributor of Westinghouse air-conditioning equipment, will be established soon at 513 Iowa Building here, under the management of Maurice Olchoff.

Bert Natkin, son of Benjamin Natkin, head of the firm, will assist Mr. Olchoff.

A new clothing store in Utica, the Roosevelt and Uptown theaters here, and A. H. Blank theaters in Cedar Rapids and Waterloo, Iowa, and Moline, Ill., will all be air conditioned by the new company branch.

Installation of conditioning equipment for the Katz Drug Store here was completed last year.

Gets Extra Mushroom Crop By Air Conditioning

FRANKFORT, Ill.—An extra crop of mushrooms each year at a season when prices are highest is the result obtained by Bogdan Bros. Industries through air conditioning, reports Emil Tewes, Westinghouse refrigeration dealer here, who sold the installation.

Three standard 3-hp. commercial condensing units provide cooling, dehumidification, and air circulation for 22,000 sq. ft. of mushrooms beds. Now temperatures as low as 53° F. are maintained during the hot summer months in the "cold house."

Assisting Mr. Tewes with technical advice on the equipment was Gil Stadeker, dealer supervisor of Wesco-Chicago.

'Glass Curtain' Between Counter and Kitchen Makes Possible Cooling of 'Diner' Lunchroom

NEW YORK CITY—A concentrated heat load problem was ingeniously overcome in a recent air-conditioning installation made in the Village Bar and Grill, an up-to-date lunchroom on Greenwich St. here by the Brooklyn office of York Ice Machinery Corp.

Being of the "Broadway Diner" type of restaurant, a tremendous amount of heat was generated in the customer space by the short order stove, electric toasters, griddles, plate warmers, oven, coffee urns, and steam tables behind the counter.

To remove this heat by absorbing it into the refrigeration system in the ordinary manner would require both an exorbitant refrigeration capacity and a very large circulation of air, York officials concluded.

By literally isolating the rear-of-counter space as far as air flow was concerned, and arranging to circulate a considerable quantity of outside air behind the counter, a solution to the problem was reached.

A counter which runs the full length of the room and a glass curtain suspended from the ceiling to within three feet of the counter top form the dividing line between the air conditioned space for the public in front of the counter and the rear-of- counter "kitchen."

Running along the counter side of the glass curtain, an outside air supply duct discharges down along the side of the glass. This air then reverses direction upwards and is exhausted outdoors through grilles run along the backbar.

In this manner, the outside air circulation picks up all odors and heat from the cooling operations and vents it to the atmosphere without interfering with the cooling portion of the room. The outside air supply is slightly less than the exhausted air so there is a slow movement of conditioned air through the three-foot opening above the counter.

The system has kept the load down so that it is handled by a 5-hp. Freon condensing unit and a Model C-600 air conditioner, York engineers report.

Air-Conditioning Orders Show 13% Increase In February over January

Data tabulated below is the second of a new series of monthly statistics on the value of orders booked for air-conditioning systems and equipment, and released through the office of Director William L. Austin, Bureau of the Census. Orders booked by 98 manufacturers are shown in this tabulation.

Item	Value of Orders Booked February	January	For 1936 Total, 2 Months
Total	**$2,611,241**	**$2,313,534**	**$4,924,775**
(A) Air Conditioning Group—Total	**$1,111,586**	**$ 950,958**	**$2,062,544**
Unit Systems—			
Self-contained (shipped substantially complete)	76,582	36,263	112,845
Not self-contained (shipped in sections), including refrigerating or cooling medium	192,763	215,420	408,183
Central-station Systems, excluding installation if installed—			
Human comfort (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	569,122	307,941	877,063
Industrial (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	35,477	78,706	114,183
Refrigerating or cooling medium sold to contractors or other distributing outlets (not manufacturing air-conditioning equipment) for air-conditioning systems, when such knowledge as to the application is available	103,282	172,445	275,727
Air washers, including pumps and motors and control where furnished	39,746	39,357	79,103
Air filters (not including sales of filters used with machinery other than fans)—			
Continuous type	139	927	1,066
Unit type	15,074	16,707	31,781
Humidifiers	79,401	83,192	162,593
(B) Fan Group—Total	**$ 783,573**	**$ 648,931**	**$1,432,504**
Fans, including bearings, pulleys, or couplings (if furnished)—			
For public and semi-public buildings	105,753	88,308	194,061
For general industrial uses	229,724	223,701	453,425
For mechanical draft	124,434	78,558	202,992
For jobber stocks and unknown uses	54,201	18,339	72,540
Small housed and propeller fans—			
Direct connected small housed blowers with motors and control (merchandise motors)	65,687	104,708	170,395
Propeller fans, direct connected and belted (for ventilation only)	136,360	77,359	213,719
Driving mechanism for general fan use (not reported above)—			
Electric motors and controllers (manufactured or jobbed)	55,926	48,560	104,486
Steam engines (manufactured or jobbed)	9,785	3,577	13,362
Steam turbines (manufactured or jobbed)	1,703	5,821	7,524
(C) Unit Heater Group—Total	**$ 716,982**	**$ 713,645**	**$1,429,727**
Industrial Type Unit Heaters, including heating element and motors where furnished—			
Equipped with blower-type (centrifugal) fans	120,122	82,810	202,932
Equipped with propeller-type fans	247,075	319,281	566,356
School-Room Type Unit Heaters, including heating element and motors and control where furnished	216,401	202,503	418,904
Indirect Heating Surface (not including unit heater surface)—			
Steel pipe coil type (manufactured or jobbed)	6,039	2,473	8,512
Cast iron type (manufactured or jobber)	9,217	11,176	20,393
Copper or aluminum type (manufactured or jobbed)	117,228	95,402	212,630

*Includes incidental equipment, such as temperature, motor, humidity, and electrical controls, dampers, outlets, etc. as are sold with each.

A SHIP MUST BE *safe!*

Materials and equipment used at sea are subjected to rigid tests of safety. That is why "Freon" refrigerants are so often used in refrigerated vessels for protection against fumes, fire or explosion.

SHIP OWNERS know it never pays to gamble with safety. The security of human life and property should never depend on chance. Skilful and careful navigation, coupled with impartial selection of the best and safest equipment, is responsible for modern safety at sea.

So it is with other industries. We know not only how terrible is the cost of neglect, but how a whole industry can suffer from a single accident. One mishap can lower public confidence and obscure safety records built up by years of conscientious effort.

The tremendous sales potential in air-conditioning makes it imperative that every installation of cooling equipment should demonstrate the desirability, efficiency and safety of modern air-conditioning.

Skilful and careful engineering in equipment manufacture and installation has done much to establish the safety records of air-conditioning. Use of "Freon" refrigerants protects against the danger of unexpected and uncontrollable mishaps.

"Freon" refrigerants are non-poisonous, non-flammable, non-explosive. They are odorless when mixed with air up to 20% by volume, and have no harmful effects on foods, clothes, furs or flowers.

"Freon" refrigerants have been tested by the U. S. Bureau of Mines, and meet all the specifications set by the Underwriters' Laboratories of Chicago in their recent report, "Standard for Commercial Refrigerating Systems" (Subject No. 207).

Today "Freon" refrigerants provide safe refrigeration in every kind of installation. They are used in schools and hospitals, in theatres, restaurants and homes, in submarines and in mines deep underground, in factories and in hotels.

Safety is never to be taken for granted. For security of life, health and property, specify "Freon" refrigerants for your air-conditioning system.

KINETIC

FREON

REG. U. S. PAT. OFF.

safe refrigerants

KINETIC CHEMICALS, INC., TENTH & MARKET STREETS, WILMINGTON, DELAWARE

NEW PROPOSED REFRIGERATION CODE FOR CHICAGO

Commercial Systems to Require Inspection; Limitations Put on Air-Conditioning Jobs

PROPOSED REFRIGERATION CODE AMENDING SECTIONS 3474 TO 3486 INCLUSIVE

Submitted to the Building Code Sub-Committee of the City Council, in lieu of the Chapter on Mechanical Refrigeration submitted by the Commission for the revision of the building code.

This proposed code was prepared by the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels, and Cooling Plants.

HARRY KOHL,
Deputy Acting for the Mayor.
GERALD GEARON,
Supervising Mechanical Engineer and Chief Deputy Inspector.

Mechanical Refrigeration

Scope. The following provisions shall apply to every refrigerating system employing any refrigerant which is expanded, vaporized, or compressed in its refrigerating cycle.

Every such refrigerating system shall be constructed, installed, and maintained in accordance with these provisions.

Definitions

For the purpose of this ordinance the following definitions shall apply:

Air-Conditioning System: A refrigerating system used for the control of temperature or humidity of air that is circulated by means of fans or blowers to space, or spaces, occupied by people, or where used for comfort cooling.

Approved: Official approval by the authority having jurisdiction.

Brine Cooler: An evaporator for cooling brine in an indirect system.

Check Valve: A valve allowing refrigerant flow in one direction only.

Compressor: A compressor is any device having one or more pressure-imposing elements, used in a refrigerating system to increase the pressure of the refrigerant in its gas or vapor state for the purpose of liquefying the refrigerant.

Condenser: A vessel or arrangement of pipe or tubing in which the vaporized refrigerant is liquefied by the removal of heat.

Direct System of Refrigeration: A system in which the evaporator is located in the material or space refrigerated or in air-circulating passages communicating with such space.

Emergency Relief Valve: A manually-operated valve for the discharge of refrigerant in case of fire or other emergency.

Evaporator: That part of a system in which refrigerant is expanded or vaporized to produce refrigeration.

Flammable Refrigerant: Any refrigerant which will burn when mixed with air.

Fusible Plug: A device having a fusible metal that will melt at a maximum temperature of 200° F. for the relief of pressure.

Generator: A generator is any device equipped with a heating element used in a refrigerating system to increase the pressure of the refrigerant in its gas or vapor state for the purpose of liquefying the refrigerant.

Indirect System of Refrigeration: A system in which a liquid, as brine or water, cooled by the refrigerant, is circulated to the material or space refrigerated, or is used to cool air so circulated.

Irritant Refrigerant: Any refrigerant which has an irritating effect on the eyes, nose, throat, or lungs.

Liquid Receiver: A vessel permanently connected to the high pressure side of a system for the storage of refrigerant.

Mixer: A vessel or device for mixing the refrigerant with another substance.

Multiple System: A multiple system is a system employing the direct method of refrigeration in which the refrigerant is delivered to two or more evaporators in separately refrigerated spaces.

Multiple Dwelling System: A refrigerating system employing the direct method in which the refrigerant is delivered by a pressure-imposing element to two or more evaporators in separate refrigerators or refrigerated spaces located in rooms of separate tenants in multiple residence buildings.

Pressure-Limiting Device: A pressure—or temperature—responsive mechanism for automatically stopping the operation of the pressure-imposing element at a predetermined pressure.

Pressure Relief Device: A pressure relief valve, a rupture member, a fusible plug or other approved device for relieving pressure.

Pressure Relief Valve: A valve held closed by a spring or other means, which automatically relieves pressure in excess of its setting.

Pressure Vessel: Any refrigerant-containing receptacle of a refrigerating system other than expansion coils, headers, and pipe connections.

Rupture Member: A device which will automatically rupture at a pre-determined pressure.

Sealed Unit: A pressure-imposing element which operates without stuffing-box, or which does not depend upon contact between moving and stationary surfaces for refrigerant retention.

Shell Type Apparatus: A refrigerant-containing pressure vessel having tubes for the passage of a heating, cooling, or refrigerant fluid.

A Ton of Refrigeration: A ton of refrigeration is heat removal at the rate of 12,000 B.t.u. per hour. (For the purpose of fees charged, see fee section, chapter 51).

Unit System: A system which can be removed from the user's premises without disconnecting any refrigerant-containing parts and which does not contain more than 10 lbs. of any refrigerant.

Classification of Refrigerating Systems

Refrigerating systems shall be classified according to the total weight of refrigerant contained in or required for their proper operation.

Class "A" system is one containing one thousand (1,000) lbs. or more of refrigerant.

Class "B" is one containing more than one hundred (100) lbs. but less than one thousand (1,000) lbs. of refrigerant.

Class "C" system is one containing more than twenty (20 lbs. but not more than one hundred (100) lbs. of refrigerant.

Class "D" system is one containing more than six (6) lbs. but not more than twenty (20) lbs. of refrigerant.

Class "E" system is one containing six (6) lbs. or less of refrigerant.

Classification of Refrigerants

For the purpose of this ordinance refrigerants shall be classified as follows:

Non-Irritant and Non-Flammable

Class 1	Class 2
Carbon Dioxide CO_2	Dichlorodifluoromethane CCl_2F_2 (F-12)
	Monofluorotrichloromethane $CFCl_3$
	Dichlorotetrafluoroethane $C_2Cl_2F_4$ (F-114)
	Dichloromethane CH_2Cl_2 (Carrene No. 1)

Flammable

Class 1	Class 2
Methyl Chloride CH_3Cl	Ethane C_2H_6
Dichloroethylene $C_2H_2Cl_2$	Propane C_3H_8
Ethyl Bromide C_2H_5Br	Isobutane C_4H_{10}
Methyl Bromide CH_3Br	Butane C_4H_{10}
	Ethyl Chloride C_2H_5Cl
	Methyl Formate $C_2H_4O_2$

Irritant

Sulphur Dioxide SO_2

Ammonia NH_3

Flammable refrigerants or refrigerants of a poisonous nature, when used in systems containing more than six lbs. of refrigerant, shall have added a substance which will impart a pungent odor or an irritating quality to the refrigerant, unless vapors are readily apparent to human sense.

Limitations As to Use and Special Requirements

Institutional Occupancies: Direct expansion refrigerating systems shall not be placed in wards, private and operating rooms of hospitals or asylums, cell blocks or prisons, homes for infants, aged, or infirm, or any place where people are confined or are helpless, except Class E Unit Systems containing a non-irritant and non-flammable refrigerant.

Refrigerating systems installed in buildings occupied by such institutions shall be subject to the following provisions:

(a) Direct systems wholly confined to a kitchen or laboratory may be installed provided the system does not contain more than 20 lbs. of a non-irritant and non-flammable refrigerant. Such kitchen or laboratory shall be equipped with tight-fitting, self-closing doors and shall have natural or mechanical means of ventilation to the outside.

(b) Indirect systems containing not more than 2,000 lbs. of a Class 1 non-irritant and non-flammable refrigerant may be installed provided all refrigerant-containing equipment is placed in a machinery room located on the first floor or in the basement. Such machinery room shall have tight-fitting, self-closing doors and shall be provided with natural or mechanical means of ventilation.

(c) Indirect systems operating above atmospheric pressure containing not more than 300 lbs. of a Class 2 non-irritant and non-flammable refrigerant may be installed provided all refrigerant-containing parts are placed in a machinery room located on the first floor or in the basement, as provided above.

(d) Indirect systems operating below atmospheric pressure containing not more than 2,000 lbs. of a Class 2 non-irritant and non-flammable refrigerant may be installed provided all refrigerant containing equipment is placed in a machinery room located on the first floor or in the basement, as provided above.

(e) Indirect systems containing 100 lbs. or less of Class 1 or Class 2 non-irritant and non-flammable refrigerant may be installed on the roof or in a pent house provided all refrigerant-containing parts are placed in a machinery room as provided above.

Industrial Systems

A refrigerating system used in the manufacture, processing, or storage of materials located in buildings used exclusively for industrial purposes shall be classified as an industrial system.

Industrial systems may be located without restriction in separate buildings, or separate sections of buildings, provided:

(a) The pressure-imposing element, condenser, receiver, shell type apparatus of a Class A system, including brine or water cooler, in excess of 12 inches in diameter and all other apparatus except connecting pipes and evaporators, are placed in a machinery room.

(b) That if a flammable refrigerant is used, the entire building for Class A systems and the machinery room for Class B systems is made of non-combustible material.

(c) Machinery room of Class A systems using an irritant or flammable refrigerant have two exits.

(d) If an irritant or flammable refrigerant is used the number of workmen shall not exceed one for each 200 sq. ft. of floor area of the floors above the first.

(e) Systems containing flammable Class 2 refrigerants shall be limited to 10 lbs. of refrigerant except in industries engaged in the manufacture and liquefication of flammable gases.

In all other details such systems must conform to the provisions contained in other sections of this code.

Commercial Systems

A refrigerating system assembled or installed in a building used for business or commercial purposes shall be classified as a commercial system.

Class 2 flammable refrigerants are not permitted in any installation.

Commercial systems shall be limited on the basis of occupancy and location as follows:

Places of Public Assembly

Refrigerating systems installed in places of public assembly, for example, auditoriums, theaters, dance halls, exhibition halls, schools, (except laboratories used for teaching refrigeration), court houses, churches, entrances and exits of public buildings, entrances and exits of factory buildings with only one exit, and all similar occupancies, shall be subject to the following limitations:

(a) Unit systems containing a non-irritant or non-flammable refrigerant may be used in such locations.

(b) Direct systems wholly confined to a kitchen may be installed provided the system does not contain more than 20 lbs. of a non-irritant and non-inflammable refrigerant. Such kitchen shall be equipped with tight-fitting, self-closing doors and shall have natural or mechanical means of ventilation.

All other refrigeration in the above locations must be supplied by the indirect system of refrigeration except as permitted in Sections — — — (Air-Conditioning Sections) with the entire refrigerant-containing equipment placed in a machinery room. These systems shall be subject to the following provisions:

(a) If an irritant or Class 1 flammable refrigerant is used, system shall not contain over 500 lbs. of refrigerant and entire refrigerant-containing equipment shall be placed in a machinery room devoted to no other purpose, located on the first floor or basement. This room shall be separated from other parts of the building by solid construction having a four-hour fire-resistive value, and there shall be no direct means of communication between such room and any other portion of building. The entrance or exit of such room shall be located in an outside wall but not in a wall forming a part of the enclosure of an exit court.

(b) If a Class 1 or Class 2 non-irritant and non-flammable refrigerant is used the machinery room shall be provided with natural or mechanical means of ventilation directly to the outside and shall be equipped with self-closing, tight-fitting doors. Such systems when installed above the first floor shall be limited in quantity to 300 lbs. of refrigerant.

Other Occupancies

Refrigerating systems installed in retail stores, restaurants, wholesale stores, beauty parlors, barber shops, offices, sales rooms, manufacturing spaces, and all similar occupancies shall be subject to the following limitations:

Direct systems of refrigeration may be installed subject to the following provisions:

(a) Systems containing a Class 1 non-irritant and non-flammable refrigerant shall be limited in refrigerant content to not more than one pound for each 100 cu. ft. by volume in the total space.

(b) Systems containing a Class 2 non-irritant and non-flammable refrigerant shall be limited in refrigerant content to not more than one pound in every 50 cu. ft. by volume of total space and the total refrigerant content in such systems shall not exceed 300 lbs. The compressor, condenser, and shell-type apparatus of systems containing more than 100 lbs. shall be placed in a machinery room with natural or mechanical means of ventilation directly to the outside and shall be equipped with tight-fitting, self-closing doors.

(c) Systems containing over 20 lbs. of a Class 2 non-irritant and non-flammable refrigerant located where there is apparatus to produce an open flame shall be equipped with a leak alarm device that will provide a signal sufficient to attract the attention of the person or persons responsible for the operation of the system in case at any time one gallon of the refrigerant should escape from the refrigerating system, unless apparatus to produce flame is vented so as to carry all products of combustion directly to the outside.

(d) Systems containing not more than 200 lbs. of irritant or Class 1 flammable refrigerant may be installed in manufacturing portions of a commercial building normally frequented by employees only, provided that where system contains over 50 lbs. of refrigerant, compressor, condenser and shell-type apparatus shall be placed in a machinery room with natural or mechanical ventilation and openings to other rooms be fitted with close-fitting, self-closing doors.

(e) Systems containing not more than 100 lbs. of irritant or Class 1 flammable refrigerant may be installed on first floor or in basement of buildings where the public is permitted, except commercial residential buildings, provided that where systems contain over 50 lbs., the compressor, condenser, and shell-type apparatus shall be placed in machinery room, with natural or mechanical ventilation and openings to other rooms fitted with close-fitting, self-closing doors; and first floor of building shall have required exits, opening directly out of doors or through corridors or other horizontal means of exit directly to an outside exit doorway.

(f) Systems containing 50 lbs. or less of irritant or Class 1 flammable refrigerant may be installed on any floor above the first floor of commercial buildings where the public is permitted, except that unit systems only may be used in retail stores, restaurants, and other locations where the number of employees serving the public exceed 10.

(g) Systems containing 50 lbs. or less of an irritant or flammable refrigerant may be installed in the basement or on the first floor only of commercial residential buildings provided that the compressor, condenser, and shell-type apparatus of such systems containing more than 20 lbs., shall be located in the machinery room. Such machinery room shall have natural or mechanical means of ventilation and shall be fitted with tight-fitting, self-closing doors.

Indirect systems may be installed in the above locations subject to the following limitations:

(a) Systems containing a non-irritant and non-flammable refrigerant may be installed in the basement or on the first floor provided all refrigerant containing parts of the system containing more than 300 lbs. of refrigerant are installed in a

(Continued on Page 13, Column 1)

Patents No. 2,025,973 1,850,049

NON-POROUS • VIBRATION PROOF • LEAKPROOF • SAFE WITH ANY REFRIGERANT • FOR EVERY AIR CONDITIONING REQUIREMENT

LEAKPROOF VIBRATION PROOF NON-POROUS

Copper-to-copper connections for refrigeration

1. LEAKPROOF... wrought copper is non-porous.
2. LEAKPROOF... pipe and fittings of pure wrought copper — equal expansion, equal contraction.
3. VIBRATION PROOF... sealed connections cannot leak refrigeration gas.

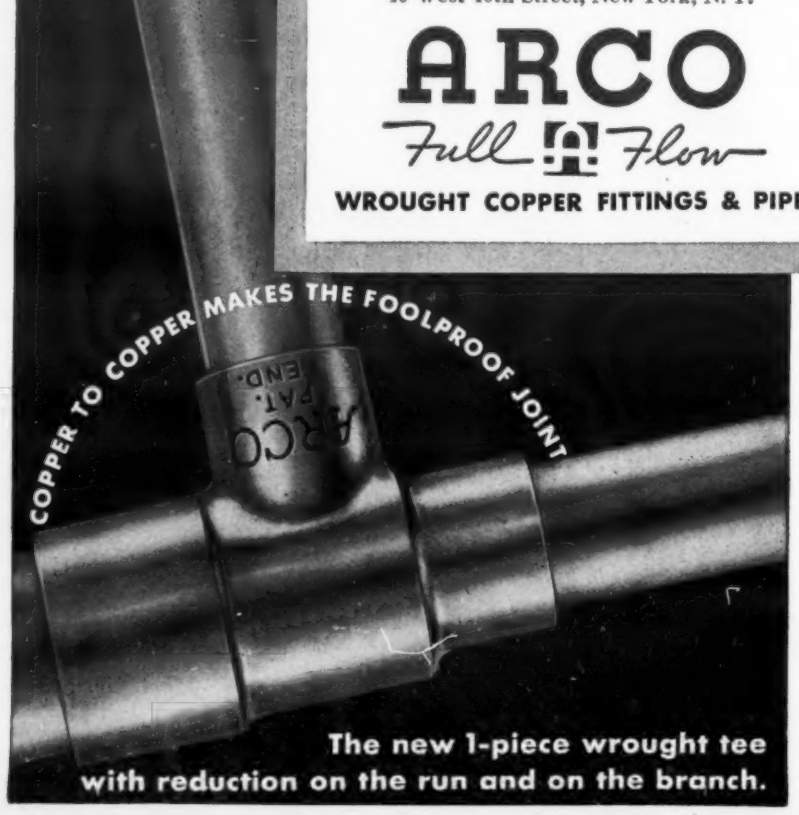
THE qualities of Arco copper seem made to order for modern refrigeration requirements. Check them off: non-porous, corrosion resisting, smooth full flow inner walls, with no place for sediment to gather at joints, easily handled, self insulating, safe with any refrigerant. These qualities run through the *complete* installation.

The Arco pure wrought copper-to-copper connection is proof against leakage, vibration, strain and pressure.

The line is complete from ¼" to 4". First cost is moderate, and greater serviceable life of Arco Copper makes it still cheaper. Many plants and manufacturers have adopted Arco Copper as standard for original and replacement equipment and installations. You will, too, when you learn the facts. Write today.

Arco Pipe and Fittings Division
AMERICAN RADIATOR COMPANY
Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
40 West 40th Street, New York, N. Y.

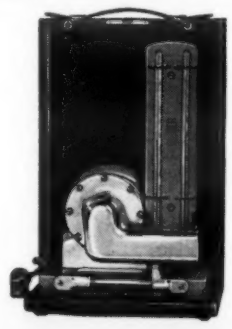
ARCO Full Flow
WROUGHT COPPER FITTINGS & PIPE



The new 1-piece wrought tee with reduction on the run and on the branch.

Really Accurate HUMIDITY READINGS Quickly!

- Readings in One Minute
- Matchless Accuracy
- Simplicity of Operation
- Easy Reading
- Handy Portability
- Quality Craftsmanship



Motor-Operated Aspirating Psychrometer with Red-Reading Mercury Thermometers
Overall dimensions of carrying case 6½ in. x 10½ in. x 4¾ in.

A new precision instrument. Tested and approved by leading air conditioning manufacturers. Used by many plant engineers in various industries. Repays its cost many times over by its convenience, accuracy and fast readings, and by eliminating breakage common to sling psychrometers. Send for descriptive circular. Desirable agency territories open.

C. E. RUSSELL & CO. Room 201, 121 Franklin St., DAYTON, OHIO

Chicago Tightens Code Requirements On Construction & Installation

(*Continued from Page 12, Column 5*)

machinery room having natural or mechanical means of ventilation. Such machinery room shall be equipped with tight-fitting, self-closing doors.

(b) Systems containing 300 lbs. or less of a non-irritant and non-flammable refrigerant may be installed between the first floor and the roof provided all refrigerant-containing parts of such systems are installed in a machinery room having natural or mechanical ventilation. Such machinery room shall be equipped with tight-fitting, self-closing doors.

(c) Systems containing more than 300 lbs. of a non-flammable and non-irritant refrigerant may be installed above the roof provided all refrigerant-containing parts are located in the machinery room. All openings from such machinery room shall be made to the outside and shall not be located adjacent to the entrance or exit of any stairway, elevator shaft, or fresh air intake.

(d) Systems containing an irritant or a Class 1 flammable refrigerant may be installed subject to the limitations as to quantity of refrigerant and location as required for direct systems.

(e) Indirect systems containing a flammable or irritant refrigerant in quantities greater than that permitted for direct systems may be installed, provided that they do not contain more than 500 lbs. of refrigerant and further provided that all refrigerant-containing parts of the system are placed in a machinery room located on the first floor or basement. Such machinery room shall be separated from other parts of the building by solid construction having four-hour fire-resistive value, and there shall be no direct means for communication between such room and other portions of the building."

In all other details direct and indirect systems of refrigeration must conform to the provisions contained in other sections of this code.

Multiple Dwelling Systems

No multiple dwelling system shall contain over 50 lbs. of sulphur dioxide, 50 lbs. of methyl chloride or 100 lbs. of dichlorodifluoromethane (F-12).

No evaporator shall be placed in a sleeping room.

No evaporator shall be placed in a room having adjoining rooms, the combined cubical contents of which has less than 4,000 cu. ft. and any part of which is used for sleeping purposes, unless such rooms are provided with a window, or windows, the total window area of such being not less than 10% of the floor area of such rooms; and unless such window, or windows, shall open to the outside air and be so constructed that at least one-half of such window, or windows, can be readily opened.

Shut off valves for multiple dwelling systems shall be installed at the following locations:

In the liquid and suction lines in each riser or manifold connection at or near the compressor.

At each service outlet in liquid and suction lines.

These valves shall be fitted with a hand wheel or other means of ready operation as an integral part thereof, and shall be located outside of refrigerating unit and at such distance above the floor as will provide ready accessibility.

Such valves, where located in living quarters, shall be placed in a metal box, or other sutiable enclosure, and shall be rigidly attached thereto or to the supports thereof. Every such outlet box shall have an accessible door or removable cover.

Not more than one refrigerator shall be connected to one outlet box.

Every such outlet box shall be located within the premises containing the refrigerator and not within the refrigerated space.

No outlet box shall be located in any hallway, stairway or vertical shaft.

Service valves shall be installed in both connections to every multiple dwelling system evaporator of the flooded type that can be removed from the refrigerator as a unit, in such manner as to permit the removal of the evaporator with valves attached.

Every evaporator, unless constructed of material of sufficient strength to prevent injury in the ordinary and customary use thereof, shall be protected by a suitable shield to assure protection against such injury.

Every evaporator shall be firmly anchored or secured in such a manner as to make it rigid.

Every refrigerator cabinet, box, or refrigerated space, containing any evaporator, using the direct system of refrigeration, shall be firmly and securely anchored and fixed to a wall, floor, or other fixed object in such manner as to hold such refrigerator box or casing securely in place.

Compressors, condensers, and shell-type apparatus shall be located in a machinery room provided with natural or mechanical ventilation or in an accessible part of the building not used for habitation, workshop, or laundry purposes, provided that where compressors are not located in a machinery room they shall be protected by the use of heavy wire netting secured to metal posts or 2x4 wooden studding and shall not be located under stairways, near dumb waiter or elevator shafts.

In all other details such systems must conform to the provisions contained in other sections of this code.

Air-Conditioning Installations

Refrigerating systems used for the control of temperature or humidity of air that is circulated by means of fans or blowers to space, or spaces, occupied by people, or where used for comfort cooling, shall be subject to the following requirements:

Direct Systems

Direct systems in which the refrigerant is circulated through coils or evaporators located in the path of the air used for air conditioning may be installed subject to the following limitations.

Where a Class 1 non-irritant and non-flammable refrigerant is used the following provisions shall apply:

(a) The total refrigerant content of the system shall not exceed one pound for each 100 cu. ft. of volume in total space to be cooled.

(b) Non-corroding materials shall be used in coils or permanent protection against corrosion is provided, such as galvanizing.

(c) Coils or coolers shall be tested to the test pressure specified for this refrigerant.

Where a Class 2 non-irritant and non-flammable refrigerant is used the following provisions shall apply:

(a) The refrigerant content of the system shall not exceed 1 lb. in every 50 cu. ft. of volume of total space to be cooled and the total refrigerant content shall not exceed 300 lbs.

(b) Any joint or connection in the refrigerant-containing part of the system shall be threaded, welded, brazed, sweated, or of such type of construction as approved by the department.

(c) No expansion valve or connection thereto shall be located in a ventilating system.

(d) No joint or connection shall be located in air stream except connections to coil headers may be located in air stream provided such connections are welded, brazed or sweated and one and one-half times the pressure specified for this refrigerant is applied in the presence of the inspector.

(e) Coils or coolers shall be tested to one and one-half times the test pressure specified for the refrigerant.

(f) Every such refrigerating system containing over 20 lbs. of refrigerant shall be provided with a leak alarm device that will produce a signal sufficient to attract the attention of the person or persons responsible for the operation of such equipment in case, at any time, one gallon of the refrigerant should escape from the system.

Where evaporators are located in apartments or hotel rooms used for sleeping purposes, or in ducts leading thereto, not more than 20 lbs. of a Class 1 or 2 non-flammable and non-irritant shall be used. The evaporators of such systems shall be subject to the provisions specified above.

Where an irritant or a Class 1 flammable refrigerant is used, the system shall be limited to industrial locations and shall be subject to the following provisions:

(a) The number of employees shall not exceed one for every 300 sq. ft. of floor area of the space to which the air is circulated.

(b) The coils or evaporators shall be constructed of non-corroding materials or permanent protection against corrosion provided.

(c) All joints in the evaporators or connections thereto located in the air stream shall be welded and subjected to a pressure of one and one-half times the test pressure specified for the refrigerant.

Indirect Systems

Indirect systems may be installed for air conditioning subject to the following limitations:

(a) All such systems shall be subject to the limitations for institutional occupancies, or industrial systems or commercial systems as they may apply.

(b) Apartment building installations shall not contain more than 100 lbs. of dichlorodifluoromethane (Freon).

(c) Indirect systems installed in hotels shall be subject to the limitations as required for commercial systems.

(d) Liquids cooled by an irritant or flammable refrigerant shall not be used in a spray system to cool the air except in industrial or manufacturing installations.

In all other details such systems must conform to the provisions contained in other sections of this code.

Unit Systems

A system which can be removed from the user's premises without disconnecting any refrigerant containing parts and which does not contain more than 10 lbs. of any refrigerant.

Such systems may be placed in any location except those prohibited in preceding sections. All unit systems shall be located in a room with adequate ventilation to the outside air, and shall have sufficient clearance around them to make them accessible.

Unit systems, unless so constructed that they will not burst due to the expansion of the refrigerant when subjected to an abnormal outside temperature, such as that created by fire, shall be protected by a pressure relief device as follows:

(a) Safety valves, if used, shall be ¼ inch in size.

(b) Rupture members, if used, shall have an opening at least 1/16 inch in diameter.

(c) Fusible plugs, if used, shall have a maximum fusing point of 200° F. and a free opening of 1/16 inch in diameter.

Every evaporator, unless constructed of sufficient strength to prevent injury in the ordinary and customary use thereof, shall be protected by a suitable shield to assure protection against such injury.

Every unit system shall have attached in a permanent manner, and in a conspicuous place, a metal disc or other emblem containing the following information in legible words and figures:

Maker's name
Kind and amount of refrigerant
Test pressure applied

In all other details such systems must conform to the provisions contained in other sections of this code.

Construction and Installation — General Requirements

All materials used in the construction and installation of refrigerating systems shall be suitable for the refrigerant used and no material shall be used that will deteriorate due to the chemical action of the refrigerant or the oil, or the combination of both.

Every part of a refrigerating system shall be designed, constructed, and assembled to withstand safely and without injury the following required test pressures:

Test Pressures in Pounds Per Square Inch

Refrigerant Used	Test Pressure
Carbon Dioxide	1500
Ammonia	300
Dichlorodifluoromethane (Freon)	225
Methyl Chloride	175
Sulphur Dioxide	135
Methylene Chloride	15

For other refrigerants not herein enumerated the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels, and Cooling Plants shall determine the test pressure to be applied.

Castings used in the manufacture of compressors and other parts of refrigerating systems shall be of sufficient thickness and close-grain structure to prevent porosity.

Pressure Vessels

The material and construction of liquid receivers, shell condensers, shell coolers, shell evaporators, absorbers, and all other pressure vessels used in refrigerating systems shall be in accordance with the American Society of Mechanical Engineers' Rules for the Construction of Unfired Pressure Vessels, Section 8 dated 1934.

Liquid receivers of direct systems used for air conditioning and for multiple dwelling systems, except those using Class 1 non-irritant and non-flammable refrigerant, shall be of sufficient capacity to contain the total charge of refrigerant. Eighty per cent of the net content of shell and tube condenser can be considered as liquid receiver capacity.

Coils

Refrigerant containing parts of coils shall have not less than .034 wall thickness for tubing sizes ⅝ inch O.D. or smaller. For outside diameters over ⅝ inch the wall thickness shall be increased in the ratio of the new diameter to ⅝ inch.

Where coils are not constructed of a non-ferrous metal they shall be protected against corrosion by galvanizing or other approved process. All connections shall be welded or brazed. Solder used for brazing shall have a melting point of at least 1,000° F.

Piping, Fittings, and Valves, Etc.

No refrigerant lines shall be located in any elevator, dumbwaiter, or other shaft containing moving objects.

Steel and Iron Pipe

(a) Standard weight steel or wrought iron pipe may be used for working pressures not exceeding 150 lbs. for pipe sizes 2 inches and over.

(b) Extra heavy steel or wrought iron pipe shall be used for all pipe 1½ inches and under.

(c) Extra heavy steel or wrought iron pipe shall be used for all pipe sizes 2 inches and over for working pressures exceeding 150 lbs.

(d) Pipe joints may be screwed, flanged or welded. Screw joints shall conform to the American Standard Association pipe thread Standard No. B-2-1919. Exposed threads shall be tinned or otherwise coated to efficiently inhibit corrosion.

(e) Flanges may be screwed or welded to pipes. All flange fittings shall be of the recess gasket type. Flange bolts shall project through nuts.

(f) Welds may be made by the fusion process, both acetylene and electric arc. Pipe may be butt end welded by the electric resistance process. All welding shall be in accordance with the standards issued by the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels, and Cooling Plants.

(g) No cast metal fittings, except steel, semi-steel, malleable iron or bronze shall be used.

(h) Reducing fittings shall be used for one or more pipe size reductions.

(i) No bends exceeding 10°, made at place of installation, shall be made in standard butt welded pipe. All bends exceeding 10° which shall have a center radius of not less than 6 pipe size diameters shall be not less than extra heavy pipe. Bends shall be substantially circular and free from wrinkles and kinks.

(j) Piping shall be supported to prevent excessive vibration and strain at joints or connections by hangers or braces of solid wrought iron or steel, not less than 1x⅛ inches cross-section. And for horizontal lines, shall be spaced not farther than 8 ft. apart.

(k) Seamless steel tubing, if used, shall conform to the thicknesses for standard and extra heavy pipe.

Copper Tubing and Piping

Seamless soft copper tubing may be used provided:

(a) Systems contain not over 100 lbs. of refrigerant.

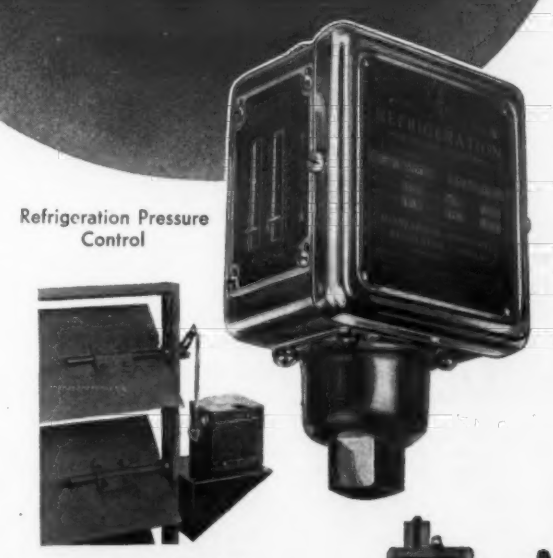
(b) Tubing does not exceed ⅝ inch in diameter nor is less than thirty-four

(*Concluded on Page 14, Column 1*)

"GENUINE DETROIT"
HEATING, REFRIGERATING AND AIR CONDITIONING CONTROLS
DETROIT LUBRICATOR COMPANY
DETROIT, MICHIGAN, U.S.A.
Canadian Representative—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg

INSIDE COOLING
In Accordance with
OUTSIDE CONDITIONS
FOR
More Comfort
WITH
Greater Economy

COMPENSATED temperature control relieves the load on cooling equipment and produces better results while it is saving refrigerating expense. Three fundamentals of control produce these results – all based on the measurement of inside and outside conditions. Compensated temperature control measures outside conditions and regulates conditions inside in direct proportion. Economizer control utilizes outside conditions for inside comfort whenever possible. Step control of two or more compressors provides modulation of cooling with the use of minimum refrigerating capacity. Take advantage of these cooling control fundamentals to give your customers greater comfort at less expense. Minneapolis-Honeywell Regulator Co., 2807 4th Ave. S., Minneapolis, Minn.


Refrigeration Pressure Control

Modutrol Motor Controlling Louvers

Modulating Thermostat

Duct Temperature Controller

MINNEAPOLIS HONEYWELL
Control Systems
BROWN INSTRUMENTS for INDICATING, RECORDING, CONTROLLING

Proposed Code Specifies Safety Devices For Various Refrigerants & Systems

(*Concluded from Page 13, Column 5*)

one thousandths of an inch in wall thickness.

(c) Copper tubing is enclosed in iron pipe or tubing or other rigid metal enclosures, except flexible metal enclosure may be used at bends or terminals if not exceeding 6 ft. in length.

(d) No enclosure shall be required for connections between compressor, condenser, or other shell type apparatus and nearest riser box, provided such connections do not exceed 6 ft. in length, and are located within the refrigerating machinery room.

(e) Every opening from or into an enclosed conduit for refrigerant lines shall be free from sharp edges which might injure tubing.

(f) Flared, flanged, or soldered joints may be used in connections.

(g) All valves and fittings except those on the evaporator and compressor and all connections of tubing shall be arranged in or on a metal box or other suitable enclosure and shall be rigidly attached thereto or to the supports thereof. Every such box or enclosure shall have an accessible door or removable cover.

(h) Piping shall be supported by hangers or other supports so as to sustain a weight of 200 lbs. applied at the point of support.

(i) Fittings shall be of forged brass or wrought copper.

(j) No tubing joint shall be placed in conduit.

(k) Flexible metal enclosures, where used, shall be constructed of a non-ferrous material.

Hard copper pipe may be used without being enclosed in conduit, provided:

(a) Pipe shall conform to the following thicknesses:

Normal Pipe Size (In.)	Decimal Equivalent of Wall Thickness
⅜	.072
½	.072
¾	.072
1	.072
1¼	.072
1½	.072
2	.083
2½	.095
3	.109
3½	.120

Note: The outside diameter of nominal size pipe is ⅛ in. larger than the pipe size shown above.

(b) Pipe shall be made from copper having a purity of at least 99.90%, as determined by electrolytic assay, silver being counted as copper. It shall be free from cuprous oxide, as determined by a microscopic examination at a magnification of 75 diameters.

(c) Pipe shall have a tensile strength ranging from 36,000 lbs. per sq. in. to not more than 43,000 lbs. per sq. in., and shall be legibly marked with manufacturer's trade mark and symbol on each length of tubing for the purpose of identification.

(d) Connections shall be made by the sweated type fittings and solder used shall be made of clean, unused metals having a melting point of not less than 400° F. and not more than 500° F.

(e) Fittings shall be of forged brass or wrought copper.

(f) Pipe shall be supported by solid hangers spaced not more than 8 feet apart, and hangers so placed that no soldered joint shall be under tension. Vertical risers shall be supported at each floor and at base of riser.

Valves

Stop or service valves shall be provided on systems in accordance with the following schedule:

* * *

Location of Valves	Class of System A	B	C	D	E
Compressor or Generator	X	X	X	X	X
Condenser	X	X	Outlet	Outlet	
Liquid Receiver	X	X	Outlet	Outlet	Outlet
Expansion Coil*	X	X	Inlet	Inlet	
Flooded Evaporator†	X	X	X	X	X
Branch Headers	X	X			

Where "X" is shown in the above schedule valves shall be provided on inlet and outlet refrigerant connections.

*In a Class C and D system having two or more evaporators in separately refrigerated spaces valves will be required on both inlet and outlet of expansion coil.

†Where branch headers are used on a Class C or D system with two or more evaporators located in separately refrigerated spaces valves shall be required on the inlet and outlet of the branch headers.

* * *

Safety Devices

Refrigerating systems normally operated above atmospheric pressure shall be equipped with safety devices according to the following table:

Safety Device Location and Venting	Non-Flammable and Non-Irritant Class 1 System Class A	B	C	D	E	Non-Flammable and Non-Irritant Class 2 System Class A	B	C	D	E	Irritant or Flammable Refrigerants System Class A	B	C	D	E
Pressure-Limiting Device	X	X	X	X		X	X	X	X		X	X	X	X	
Pressure Vessel Relief Device	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Vent to Atmosphere	X					X	X	X			X	X	X	X	
Compressor Relief Device	X	X	X			X	X	X			X	X	X		
Hand-Operated Relief Valve	X					X	X				X	X			
Discharge Check Valve						X					X	X			
Quick-Closing Suction Valve						X					X	X			

* * *

No connection shall be made with the public water supply which will impair the purity thereof. Water used for removing heat from a refrigerating system shall not thereafter be used for drinking purposes. When a regulating valve is used it shall be connected between compressor or condenser and city water supply.

Pressure Vessel Relief Devices: Shell type apparatus such as condensers, liquid receivers, evaporators, liquid separators, and absorbers which can be cut off by stop valves shall be equipped with an approved pressure-relief device, set at a pressure not to exceed the pressure for which vessel is designed. The inlet size of these relief devices shall be based on the refrigerating capacity for which the pressure vessel is designed and shall be sized in accordance with the following table:

Refrigerating Capacity	Relief Device Pipe Size
Up to 15 tons	⅜"
16 tons to 30 tons	½"
31 tons to 60 tons	¾"
61 tons to 100 tons	1"
101 tons to 175 tons	1¼"
176 tons to 250 tons	1½"
251 tons to 450 tons	2"
451 tons to 900 tons	Two 2"

The outlet connection from these relief devices shall be equal to or greater than the size of the inlet connection.

Compressor Relief Devices: Compressors on Class A, B and C refrigerating systems, except those containing 50 lbs. or less of non-irritant and non-flammable refrigerant shall be equipped with a pressure-relief device located between the pressure imposing element and the stop valve on the discharge side. Such valves shall be set at 90% of the test pressure specified for the refrigerant used. Where a flammable or irritant refrigerant or a Class 2 non-flammable or non-irritant refrigerant is used this device shall be vented into the low pressure side of the system. Where a Class 1 non-flammable and non-irritant refrigerant is used this device may discharge to the atmosphere but shall be piped to discharge toward the ceiling, not less than seven feet above the floor. Systems containing 1000 lbs. or more of Class 1 non-flammable and non-irritant refrigerant shall be vented to outside atmosphere. The inlet pipe size of these relief devices shall be based on the gross displacement of the compressor and shall conform to the following table:

Compressor Displacement Cubic Feet Per Minute	Relief Device Size
Up to 25 cubic feet	⅜"
26 to 100 cubic feet	½"
101 to 200 cubic feet	¾"
201 to 350 cubic feet	1"
351 to 580 cubic feet	1¼"
581 to 850 cubic feet	1½"
851 to 1500 cubic feet	2"

The displacement from these relief devices shall be equal to or greater than the inlet connection.

Pressure-Limiting Devices: Pressure-limiting devices, where required, are to stop the action of the pressure-imposing element at a pressure less than 70% of the pressure relief devices located on the high-pressure side of the system.

Stop Valve: No stop valve shall be located between a pressure-relief device or pressure-limiting device and the part of the system protected thereby, unless two devices of required size are used, and so arranged that only one can be shut off at any one time.

Hand Relief Valves: Hand-operated relief valves of an area equal to the area of the relief devices required for the apparatus shall be arranged or located so that they may be operated outside the machinery room. These valves shall be vented to the atmosphere, as further provided.

Check Valves: Absorption systems shall be provided with check valves located between the rectifier and condenser and in the discharge line of the aqua pump as close to the pump as is practical.

Quick-Closing Suction Valves: A quick-closing suction valve shall be installed in the suction pipes of each compressor in accordance with the above schedule on systems containing over 200 lbs. of refrigerant. These valves shall be arranged for manual closing from a point near the entrance to the room in which the compressor is located, or to automatically close in case of sudden failure of pressure in the suction pipe at the compressor.

Pump-Out Connection: Compressors of Class A and B refrigerating systems, except those operating below atmospheric pressure or those containing a Class I non-irritant and non-flammable refrigerant, shall be equipped with pump-out connections. These connections shall be designed to reverse the normal flow of refrigerant so that the refrigerant contained in the high-pressure side may be pumped into the low pressure side of the system.

Pressure Gauges: Class A, B, C, and D refrigerating systems shall be equipped with pressure gauges on the high and low pressure side. Every liquid level gauge glass shall be of sufficient strength to withstand the high side test pressure and, except those of the bull's-eye type, shall have automatic closing shut off valves and shall be adequately protected against injury by slotted metal casings.

Refrigerating systems normally operated below atmospheric pressure shall be equipped with a pressure-relief device, pressure gauges, and shall be subject to the requirements of vent to atmosphere, as specified above.

Discharge of Refrigerant

Refrigerant shall be discharged as follows:

(a) Where an irritant or flammable refrigerant is used the discharge must be conducted to the outside, not less than 12 ft. above the ground and not closer than 10 feet to any opening in building or closer than 20 feet to any fire escape. The discharge pipe shall be not less than the size of the relief device outlet.

(b) Where ammonia is used in a system refrigerant may be discharged into a tank of water which shall be used for no purpose except ammonia absorption. At least one gallon of fresh water shall be provided for every one pound of ammonia in the system. The water used shall be prevented from freezing without the use of salt or chemicals. Tank shall be substantially constructed of not less than ⅛ inch steel. No horizontal dimension shall be greater than one half the height. The tank shall have a hinged cover or, if closed, shall have a vent of ample capacity at the top. All pipe connections shall be through the top of the tank only. The discharge pipe for the pressure relief valve shall discharge the ammonia in the center of the tank near the bottom.

(c) A hand operated relief valve on a system using ammonia shall discharge into such tank of water or into an ammonia mixer consisting of a closed cylinder designed for 50 lbs. per sq. in. working pressure, with ammonia and water inlet connections and a valveless connection to sewer, so arranged that the ammonia will be completely absorbed before leaving the mixer. The connection shall be so arranged that it is impossible to operate the hand-operated ammonia relief valve without first opening the valve supplying the water to the ammonia mixer.

(d) Where a Class I non-irritant and non-flammable refrigerant is used in a system containing more than 1000 lbs. of refrigerant, or a Class 2 non-irritant and non-flammable refrigerant is used in a system containing more than 50 lbs. of refrigerant, the discharge from the pressure relief device shall be to the atmosphere, not less than 20 feet from a fire escape and 12 feet above the ground.

(e) Relief devices located on the pressure vessels may be vented to the low-pressure side of a system, provided the low-pressure side is equipped with relief device vented to the atmosphere.

(f) Discharge from more than one relief valve may be run into a common header, the area of which shall be equal to the area required for the total refrigerating capacity of all the vessels.

Tests

It shall be the duty of any person, firm or corporation installing refrigerating system to apply tests to said systems as required by the chief inspector of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels, and Cooling Plants.

Tests shall be made in the presence of an inspector of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels, and Cooling Plants and shall be applied to every refrigerating system, or parts thereof, installed before being put into use.

Provided, however, the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels, and Cooling Plants may accept from the manufacturer of a single-unit system a certified copy of test report showing that tests of said system, as required by this ordinance, were made at the place of manufacture.

It shall be the duty of every person, firm, or corporation installing refrigerating systems, as aforesaid, to notify the chief inspector of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels, and Cooling Plants whenever any system has reached the stage of construction where it is ready for inspection tests.

The testing of every refrigerating system shall include a pressure or vacuum test of the complete piping system preferably with the evaporator installed, but valves thereon may be closed to prevent withdrawal of the refrigerant.

Under these tests a partial vacuum of 20 inches of mercury shall be produced within the system and shall be held for a period of at least one hour with no detectable drop.

Every part of every refrigerating system shall be designed, constructed and assembled to withstand safely, and without injury, the required minimum test pressures, as specified in Section ——, which shall be applied for the pressure test. These test pressures shall be held by every refrigerating system under test for a period of at least one hour, or over, without any appreciable fall.

Gases to be Used for Testing: Pressure tests shall be made with air, carbon dioxide, nitrogen, or other inert gas approved by the department. When practical, water may be used. When testing with air, care shall be taken to prevent the temperature at any point from rising above 130° F.

Operating Precautions

It shall be the duty of the person in charge of the premises wherein any refrigerating system is located to exercise due diligence to see that the refrigerating system is properly maintained and operated at all times.

A gas helmet or mask suited to the refrigerant used shall be provided with every Class A system, and with every Class B system that operates above atmospheric pressure except when carbon dioxide is used.

Every gas helmet or mask shall be of a type approved by the Chief Inspector of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels, and Cooling Plants as being suitable for the refrigerant used, shall be inspected annually by said chief inspector and shall be kept in operative condition in an easily accessible case or cabinet.

Whenever a flammable or irritant refrigerant is drained from any system it shall be discharged into a suitable absorbent or container which shall not be connected to the system except during period of charging or withdrawing refrigerant.

Whenever the losses of refrigerant from a system are such as to endanger the health or lives of the human occupants of any room or structure in which such refrigerating system, or any part thereof, is located, it shall be the duty of the owner of such refrigerating system to apply suitable pressure or other tests to prove the system tight.

Instructions and Refrigerant Charges to be Posted

It shall be the duty of the owner of any refrigerating system, except a Class D and E system, to post and keep conspicuously posted as near as practicable to the pressure-imposing element of such system a card giving operating directions for such system, including precautions to be observed in case of a breakdown or leak. The following shall be included in the instructions and information listed on such cards:

1. Instructions for shutting down system in case of emergency.
2. The name, address, and telephone number of every engineer or operator in charge.
3. The name, address, and day and night telephone number for service.
4. The location of the nearest fire alarm box.
5. The telephone number of the Department for the Inspection of Steam Boilers, Unfired Pressure Vessels, and Cooling Plants, and instructions to notify said department immediately in a case of serious leakage or other emergency.
6. The date, amount, and kind of refrigerant placed in the system at the time of initial charging and every subsequent re-charging and the name and address of the person, firm, or corporation charging or re-charging the system.

Every single-unit refrigerating system shall have attached in a permanent manner and in a conspicuous place within or on the refrigerated space, a metal tag or other emblem containing the following information, in legible words and figures: maker's name, kind and amount of refrigerant used, test pressures applied.

Every Class A, B, C, and multiple Class D system shall have the name of the refrigerant painted or affixed in a permanent manner either to the pressure-imposing element or to the piping in proximity thereto. The kind of refrigerant and instructions for shutting off refrigerant shall be prominently posted at the branch valves used for shutting off each evaporator or set of evaporators contained within each refrigerated space.

GET THIS

NEW FOLDER ILLUSTRATING & DESCRIBING BAKER'S COMPLETE LINE OF FREON UNITS

77 MODELS 1/4 to 60 H.P. CAPACITY

Just off the press, this new folder gives you an inside and out inspection on paper of the entire line of Freon and methyl-chloride units designed and manufactured by Baker. It's the most complete line of commercial units offered by any manufacturer, with capacities graduated to fit all applications. You'll be interested in the data concerning performance and mechanical features of both air and water cooled models—as well as the unusual sales opportunity offered by this pioneer company. Write for folders and information.

BAKER

ICE MACHINE CO., INC.
1507 Evans St., Omaha, Neb.

Inquiries invited from dealers and distributors

MEMBER RELIABILITY ACMA EXPERIENCE AIR CONDITIONING MANUFACTURERS ASSOCIATION

New 1936 Model SOUTH BEND LATHE $75 LESS MOTOR

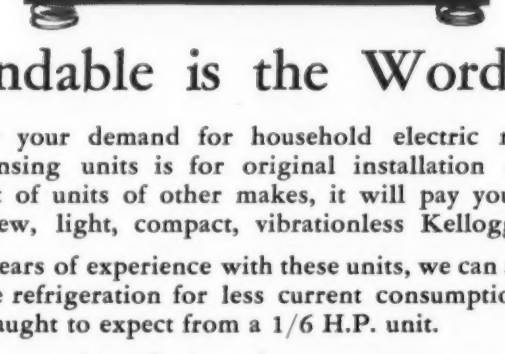
Write for details on this 9 in. x 3 ft. Workshop Precision, back-geared, screw-cutting Lathe. Made in 8 different drives, 4 bed lengths. Easy Payment Terms arranged over extended period of time. Complete information on request.

FREE WRITE FOR CATALOG 15

WEIGHS 310 Lbs. Crated

SOUTH BEND LATHE WORKS
205 E. MADISON ST. SOUTH BEND, IND. U.S.A.

KELLOGG



Dependable is the Word . . .

Whether your demand for household electric refrigeration condensing units is for original installation or for the replacement of units of other makes, it will pay you to investigate the new, light, compact, vibrationless Kellogg Highside.

After four years of experience with these units, we can safely assure you of more refrigeration for less current consumption than you have been taught to expect from a 1/6 H.P. unit.

It is small enough to fit into the compressor compartment of almost any domestic refrigerator box.

Kellogg can also supply commercial sizes from 1/4 to 5 H.P.

Write for your copy of the new Kellogg catalog and price list before you place your next order for highsides.

KELLOGG COMPRESSOR AND MANUFACTURING CORPORATION

ROCHESTER, NEW YORK U.S.A.

Air Conditioning

Decision in Auditorium Patent Suit Traces Development Of By-Pass Methods

(*Editor's Note*: The following decree by Federal Judge Alfred Coxe of the United States District Court, New York, has been affirmed by a United States Circuit Court of Appeals. The decision of Judge Coxe is published in full not only because of its importance with relation to patents in the air-conditioning industry, but because it discusses fundamental concepts of air-conditioning practice, and describes the methods used in central-station types of air-conditioning systems.)

This is an infringement suit involving the Lewis Re-issue patent, No. 16,611, dated May 3, 1927, and the Fleisher patent, No. 1,670,656, dated May 22, 1928, both relating to air conditioning in theaters, auditoriums or other large enclosures, where people congregate in considerable numbers. The two patents are owned by the plaintiff; and the defendants are charged with operating an infringing system in the Hollywood theater in New York City.

The claims in issue are Nos. 1, 3, 13, and 14 of the Lewis patent, and Nos. 1, 13, 14, 17, and 20 of the Fleisher patent; and typical claims of both patents were held valid and infringed by Judge Hazel in *Auditorium v. Greater Rochester,* 59 Fed. (2) 450, and by Judge Campbell in *Auditorium v. St. George,* 4 Fed. Sup. 95. The case before Judge Campbell was, however, tried on the issue of validity solely on the record made before Judge Hazel; and Judge Campbell found invention with respect to both patents on substantially the same grounds as given by Judge Hazel in the earlier litigation. Neither decision was reviewed by the Circuit Court of Appeals.

In the present case, the defendants have made an entirely new record, with additional prior patents, publications and uses; and the whole question of the validity of both patents has been relitigated and presented *de novo*. There is no suggestion at this time of estoppel by reason of the decrees in the two previous cases.

The defenses are invalidity and non-infringement.

The controlling factors in air conditioning are the temperature and the relative humidity. These two are intimately related, and any change in temperature affects also the relative humidity. The reason is obvious, for it is elementary that the amount of moisture which a given quantity of air can absorb varies with the temperature. Therefore, if air is heated, its capacity to hold moisture is increased, and its relative humidity diminished; and, conversely, if it is cooled, its capacity to hold moisture is decreased, and its relative humidity raised. When air is cooled to the dew point, saturation starts, and further cooling results in precipitation.

In hot weather, the air is unpleasant if both the temperature and the relative humidity are high. The problem is, therefore, to reduce the temperature and dehumidify. This is ordinarily accomplished by passing the hot air through a conditioner, where the temperature is reduced below the dew point, and the desired amount of moisture eliminated by precipitation. The air coming from the conditioner is then cold and dehumidified, but it cannot be used without causing cold drafts and serious discomfort. To remedy this defect, it is necessary again to raise the temperature of the air by reheating, or otherwise, in order that its capacity to absorb moisture may be increased, and its relative humidity correspondingly reduced. When this is done, the air is in a condition to be used without discomfort.

These principles of air conditioning have been thoroughly understood for years; and they are well and clearly expressed in a booklet recently published by the plaintiff, entitled "The Key to Economy in Comfort Cooling," reading as follows:

"The bring the air to a comfortable temperature and relative humidity, we must first squeeze out the surplus moisture. This we condense by cooling the air down to about 56 degrees—a temperature much lower than required in the building. We then have to reheat the cooled air to a normal temperature and this will give the relatively dry air that makes one feel comfortable even at temperatures as high as 78 degrees and 80 degrees."

This booklet also states that there were two recognized methods known to the prior art for reheating the cooled air to bring it to a normal temperature: "One, the inexpensive and unsatisfactory way, is to blow cold air directly into the room and depend upon the warm air in the room to do the reheating," which was unsatisfactory because it was "likely to create drafts;" and "The other method, expensive but satisfactory, is to use create drafts," and "The other method, steam for reheating." Of this latter, makes the following comment:

"By this separate reheating means the 56 degrees dehumidified air can be accurately controlled at any desired temperature and a good supply of comfortable air furnished to rooms without cold drafts. But the cost of such a system is prohibitive. Besides requiring an enormous refrigerating machine to cool the full volume of air down to the dewpoint, it needs an expensive steam plant for reheating. This is an obvious absurdity in a summer cooling plant."

With this background of the patents, it is not difficult to see what Lewis and Fleisher understood they had accomplished. Lewis says in his patent that his main object was to save the prohibitive expense of reheating, and he did this by mixing the cold air leaving the conditioner with the recirculated or warmer air withdrawn from the room, which bypassed the conditioner. In that way, he not only saved the cost of reheating but also cut down the expense of refrigeration. Fleisher went a step further, and not only bypassed some of the air from the room around the conditioner, as in Lewis, but also mixed withdrawn or recirculated air with fresh air before passing it through the conditioner. This is described in the Fleisher patent as follows:

"Great economies may be thus effected by utilizing, insofar as possible, air coming from the room itself rather than outside air. This withdrawn or recirculated air is preferably used for two purposes. First, because of its close approximation to the standard desired, it may be used in part at least, as the air to be conditioned intensively to restore the room conditions. Second, it may be used to increase the volume of circulating air and to dilute the intensively conditioned air so that it shall not differ too much either in temperature or humidity from the standard to be maintained."

The Lewis method Claim 1 is fairly typical, and reads as follows:

"1. The method of ventilating an enclosure in which people assemble, which includes withdrawing air from said enclosure, conditioning fresh air to provide air having a dew point lower than the dew point of the withdrawn air, mixing said conditioned fresh air with air withdrawn from the enclosure and delivering the mixed air to the enclosure, and varying the proportions of said fresh air in the mixture in accordance with changes in the number of people in the enclosure."

Claim 1 of the Fleisher patent reads as follows:

"1. The process of ventilating and conditioning a room, which includes withdrawing air from the room, mixing fresh air with withdrawn air, conditioning said mixture, adding withdrawn air having a condition different from the conditioned air to said mixture after conditioning and adjusting responsive to air conditions in the room the proportions of conditioned air and withdrawn air to vary the humidity in the room."

The apparatus claims of both patents are similar to the analagous method claims, and require no particular comment.

I think the patents must stand or fall on the principle of using with a bypass the recirculated or withdrawn air from the room to temper the cold, saturated air coming from the conditioner. Did this constitute invention? Judge Hazel held that it did, because he thought it was "a new and novel conception"; and Judge Campbell reached the same conclusion after finding that the by-passing was "the gist of both of the patents in suit."

The practice of mixing cold, conditioned air with by-passed untreated outside air, in order to raise the temperature and reduce the relative humidity, is fully disclosed in the Rietschel Book (1894), and the Senate Report (1895); and the Hoffman British patent, No. 16,598 (1898), and the Klein patent, No. 1,296,968 (1919), disclose the use of warm air from the room to temper the cold air leaving the conditioner. Klein also shows the mixing of outside air with interior air before entering the conditioner.

The Hoffman patent contains the following statement:

"As is well known if cold air is introduced into the interior of a heated room unpleasant if not dangerous drafts are created."

"To obviate this is an essential feature of my invention and I arrange to mix the incoming air with the air in the building before delivering the same into the building, and thus equalize to some extent the temperatures of the air without and within the room."

Klein summarizes his invention as follows:

"My invention embodies a method of ventilating, or ventilating and heating or cooling interiors, applicable to the blast system in such manner as to retain the advantages of that system and to remove the prior objections to cost or else to strong air currents and uncomfortable hot or cold blasts in the zone of occupancy in both large and small interiors, and it permits the use of conditioning, circulating and distributing systems which are considerably reduced in size and less expensive in operation. I attain these objects broadly by tempering just prior to entry into the interior, considerably heated or cooled fresh air with other air from the interior, and discharging the mixed air into the interior."

The Klein patent also states:

"In the wall and floor conduit system of Fig. 1, fresh air is drawn by a fan from the outside of the interior, or from the inside, or from both the outside and inside, in amounts regulated by the valves or dampers 1, and is forced through a water spray or other cleansing or humidifying apparatus and into contact with the heating or cooling apparatus, all of which apparatus, including the fan, is indicated by the reference 2."

It will thus be seen that there was nothing new in the use of a bypass; or in tempering cold, saturated air with recirculated or warmer air withdrawn from the room; or in mixing outside air with interior air before passing through the conditioner; and any claim of Lewis and Fleisher to invention for those specific ideas must, therefore, necessarily fail.

The plaintiff insists, however, that the particular organization of the patented systems constituted invention, and that Lewis and Fleisher were the first to develop highly organized apparatus capable at all times of responding to rapidly changing conditions of temperature and humidity both inside and outside the room being conditioned. The difficulty with this contention is that all of the control mechanism of both patents, including the dampers, hygrostats, thermostats, and other apparatus, was old, and it was within the skill of the calling to position and adjust these various devices to fit any desired system. It was conceded also by the plaintiff's expert that automatic controls were mere conveniences and not necessary in the operation of either system. Moreover, the plaintiff itself, in its own booklet, stated that under the old reheating method of the prior art, the dehumidified air leaving the conditioner could be "accurately controlled at any desired temperature and a good supply of comfortable air furnished to rooms without cold drafts."

The Klein patent, No. 1,296,968 (1919) was concededly the best patent reference cited by the defendants in anticipation of both patents in suit; and this patent, in addition to showing the use of a by-pass, and the mixing of inside air before and after it left the conditioner, shows the use of dampers similar to those employed by Lewis and Fleisher. The Klein patent was, however, criticized by the plaintiff as an anticipation principally because of the use of an injector instead of a fan for the purpose of inducing an air current in the wall circuit.

But Klein expressly states that "any suitable form of injector may be used for my purpose, or the air from the interior may, if desired, be forced to the place of mixture with the fresh air by means of fans"; and the substitution of a fan in place of Klein's preferred injector produces the identical systems of Lewis and Fleisher. I can see no escape from the conclusion, therefore, that Klein is an anticipation of both patents in suit.

There may be a decree holding that claims Nos. 1, 3, 13, and 14 of the Lewis Reissue patent No. 16,611, and claims Nos. 1, 13, 14, 17, and 20 of the Fleisher patent No. 1,670,656, are invalid for lack of invention; and dismissing the complaint with costs.

To Handle Trane Coils

BROOKLYN—Trane Co., heating and air-conditioning manufacturer of La Crosse, Wis., recently appointed Saltzer & Weinser, Inc., to handle its equipment here.

Philadelphia Dealers Plan Advertising On Conditioning

(*Concluded from Page 1, Column 3*)

less of outside temperatures or conditions. Air conditioning provides exactly the desired temperature at all times, cleans the air, takes out excess heat and humidity in the summer, and moistens and tempers the heated air in the winter."

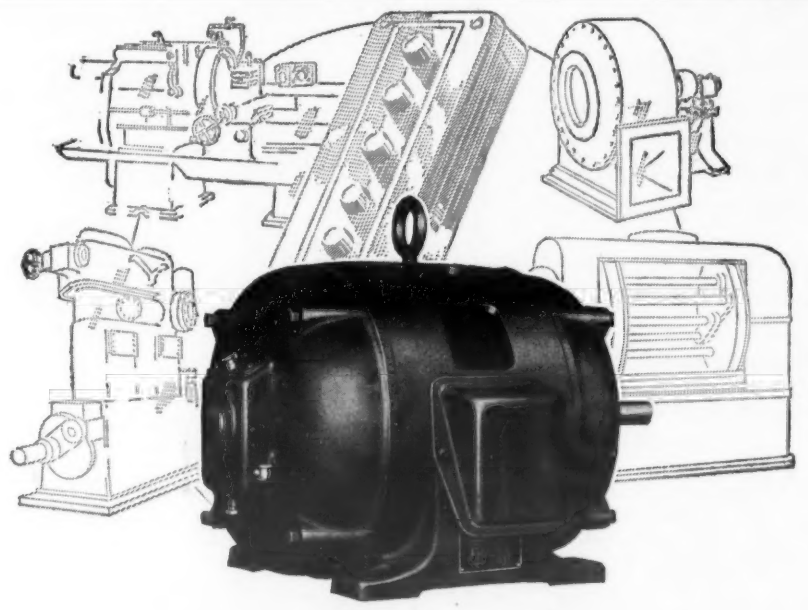
Drawings of Jones and friend Brown solving the problem of poor worker morale bring out the lesson in another piece of copy titled, "Air Conditioning Is Revolutionizing Manufacturing Conditions and Processes."

"Climatic conditions are no longer an obstacle in manufacturing," the copy reads. "Air conditioning provides and maintains, inside the plant, exactly the conditions of temperature, moisture, etc. best suited to any manufacturing or fabricating process. It also increases the comfort, good health, and happiness—and therefore the efficiency—of employes."

"Air Conditioning Is a Demand of the New Generation" the caption of another advertisement tells us. "To the grandparents of today, air conditioning seems like a miracle. The parents enjoy it when and where they find it. But the new generation will not be satisfied without it. They demand the perfect indoor weather which it provides and maintains at all times regardless of outside temperature or conditions. And you can't fool them with substitutes. They recognize and approve complete scientific air conditioning."

"Customer Comfort Is Spelled 'Air Conditioning,'" "Fresh Air, the Best Service a Shop Can Offer," "Every Genuine Air-Conditioning Installation Is a Separate Engineering Job," and "Air Conditioning Is Made to Measure," are the other messages which the advertisements carry.

The campaign is being sponsored by the following members of the air-conditioning division of the association, whose names appear on each advertisement: De La Vergne Engine Co. (De La Vergne); Elliott-Lewis Co., (Frigidaire); S. S. Fretz, Jr., Inc. (General Electric); Eugene P. Kiehl, Inc. (Westinghouse); Peirce-Phelps, Inc. (Chrysler-Airtemp); Raymond-Rosen & Co. (Kelvinator); Trilling & Montague (Carrier); York Ice Machinery Corp. (York).



Push the Button—Change the Speed

As many as 4 predetermined speeds may be secured with Century Multispeed Squirrel Cage Induction Motors—by using a standard push-button station switch.

This is a distinct advantage in all installations where convenient, positive speed-change control is required to regulate the volume of air, amount of refrigeration, conveyor travel and other processing and tool speed changes.

For greater satisfaction—add the dependable performance of Century Multispeed Squirrel Cage Induction Motors.

CENTURY ELECTRIC COMPANY
1806 Pine Street St. Louis, Mo.
Offices and Stock Points in Principal Cities

Century MOTORS

UP TO 600 HORSEPOWER

The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

NEW
PEERLESS 1936 CATALOG
NEW PRICES NEW COILS
NEW PRODUCTS
COMPLETE ENGINEERING DATA
WRITE OR WIRE FOR YOUR COPY!
PEERLESS ICE MACHINE CO.
CHICAGO 515 W. 35th St. — TWO FACTORIES — NEW YORK 43-00 36th St., L.I.C.
Representatives in all principal cities.

KOCH
Believes In
CORKBOARD
The Insulation of every Koch fixture is installed thickly and thoroughly. Display cases, for example, have 4-in. thick corkboard insulation. The result is lower operating costs and diminished machine capacity required for refrigeration.
DISTRIBUTORS WANTED
Write for catalog and sales proposition. Submit references. Some attractive territories still open.
KOCH
North Kansas City, Mo.
KOCH ESTABLISHED 1883
KOCH NORTH KANSAS CITY MO

TYLER'S NEW WELDED STEEL REFRIGERATOR CASES

At last a general purpose case at a sensible price. Offers every advantage of the most costly cases at tremendous savings. Modern in every detail. Comes equipped with coils. Single and double duty models.

AN AMAZING VALUE

Hundreds in use. Perfect refrigeration for meat, dairy and delicatessen products and all perishables sold in food stores. Write or wire for all the facts.

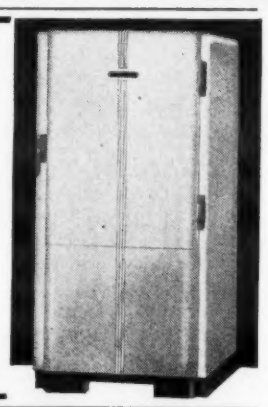
TYLER Sales-Fixture CO. Dept. E, Niles, Mich.

3 INCH INSULATION - TRIPLE GLASS

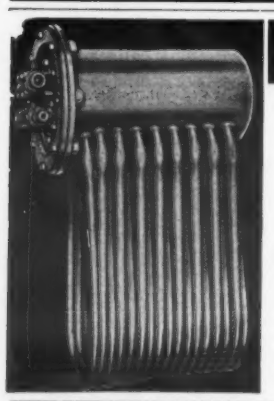
DAYTON Gives You

You control your own re-sale prices, selling methods and profits with Dayton. Write for Money-making facts on line and policies.

- Long Discounts
- Interchangeable Snap-On Colors
- Quiet Performance
- DeLuxe Cabinets



HEINZ & MUNSCHAUER
22 Superior St. Established 1865 Buffalo, N.Y.



STANGARD STANDS SUPREME

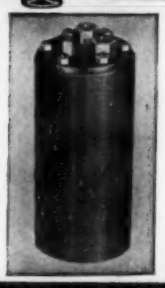
....in the fine art of recalibration of float valves and the silver soldering of evaporation coils . . . for all makes of Ice Cream Cabinets.

WE MANUFACTURE AND REPLACE... Monel Tops • Enamel Panels • Tanks • Rims and Rim Sleeves ... all other parts for all make cabinets.

STANGARD PRODUCTS
A Division of Standard Body Corp.
430 E. 104th Street, New York
Write for Details

PURO
ELECTRIC WATER COOLERS
Thoroughly reinforced all steel attractively finished cabinets.
Complete line of different Models and Capacities.
Write for details and sales prices.
Puro Filter Corporation of America
440 Lafayette Street, New York City — Spring 7-1800

STANDARD REFRIGERATING APPLIANCES



OIL SEPARATORS with AUTOMATIC OIL RETURN

Write for bulletin on complete line covering refrigerating appliances, liquid line filters, dehydrators, acid neutralizers, standard parts and materials, service tools, shaft seals, bearing metals and parts. Descriptive literature will be gladly furnished on any or all of these lines on request.

AMERICAN INJECTOR COMPANY 1481 - 14th. Street, Detroit, Mich.

Detroit Contractors Ordinance Approved

(Concluded from Page 1, Column 4)

that period, or if the licensee permits his license to lapse, the fee is the same as in the original issue, $25.

The ordinance, however, does not apply to new installations of self-contained domestic units having a capacity of not more than 6 lbs. of any refrigerant.

Licenses are renewable annually, and may be revoked by the Mayor upon recommendation of the Commission of Buildings and Safety Engineering for gross incompetence, gross neglect, deliberate misrepresentation, or wilful failure to comply with the rules of the ordinance.

Under terms of the ordinance, licenses shall be classified as to definite types of refrigerants used in the installation and service of refrigerating systems, and applicants may be licensed for that particular refrigerant. Any person, firm, or corporation, however, may make application for and receive a license to engage in the installation and service of all classes of refrigerating systems.

Complete text of ordinance follows:

ORDINANCE No. 361-C

(Insert opposite page 456)

AN ORDINANCE to amend Chapter 130 of the Compiled Ordinances of the City of Detroit of 1926, relative to the inspection, regulation and operating of Ice Making, Cooling and Multiple Refrigeration plants, by adding a section to be known as Section 1 (a).

IT IS HEREBY ORDAINED BY THE PEOPLE OF THE CITY OF DETROIT:

Section 1. That Chapter 130 of the Compiled Ordinances of 1926 be and the same is hereby amended by adding a section to be known as Section 1 (a), reading as follows:

Sec. 1 (a). No person, firm or corporation shall, or shall contract to, install, alter or service any refrigerant containing part of any refrigerating system, without first securing a license from the Mayor of the City of Detroit except as herein provided for. This ordinance shall not apply to new installations of self-contained domestic units having a capacity of not more than six pounds of any refrigerant. License to install, alter and/or service any refrigerating system shall be issued by the Mayor upon the recommendation of the Commissioner of Buildings and Safety Engineering after application in writing has been made to the Commissioner of Buildings and Safety Engineering and a fee to be established by the Board of Rules of the Department of Buildings and Safety Engineering has been paid and a bond in the sum of One Thousand Dollars ($1,000.00), running to the City of Detroit for the faithful observance of the provisions of the ordinance has been filed with the Department of Buildings and Safety Engineering. Such bond shall be a personal bond with two sureties, or one from a recognized and approved surety company acceptable to and approved by the Corporation Counsel of the City of Detroit.

All such licenses shall be renewed annually and shall be revokable by the Mayor upon the recommendation of the Commissioner of Buildings and Safety Engineering, for gross incompetence, gross neglect, deliberate misrepresentation or wilful failure to comply with the requirements of this ordinance.

Licenses shall be classified as to definite types of refrigerants used in the installation and/or service of refrigerating systems and applicants may be licensed for that particular refrigerant: Provided, however, any person, firm or corporation may make application for and receive a license to engage in the installation and/or service of all classes of refrigerating systems.

No license shall be issued until applicant has shown to the Department of Buildings and Safety Engineering by sworn affidavit that he, or it, has been actively engaged in the installation and/or service of refrigerating systems for a period of at least three (3) years, or has in his employ and actively in charge a person who has been engaged in the installation and/or service of refrigerating systems for a period of at least three (3) years.

Sec. 2. All ordinances and parts of ordinances in conflict herewith are hereby repealed.

Sec. 3. This ordinance is hereby declared to be immediately necessary for the public peace, health, and safety and shall take immediate effect.

Approved April 7, 1936.

FRANK COUZENS,
Mayor.

Attest:
RICHARD W. READING,
City Clerk.

The above ordinance will take effect on the 8th day of April, 1936.

RICHARD W. READING,
City Clerk.

Allen-Bradley Moves New York Offices

NEW YORK CITY—Branch offices here of the Allen-Bradley Co., manufacturer of motor control equipment, have been moved from 50 Church St. to new and larger quarters in the Underwood building at 30 Vesey St.

In its new location the company will carry a complete consignment stock of motor control equipment.

City Officials Attend Contractors Banquet

(Concluded from Page 1, Column 5)

phy Refrigeration Service; W. F. Mercier and B. Barnes, Mercier & Clark, Inc.; James Wood, Model Refrigeration Service; Nick Achs, Modern Electric Refrigeration; John H. Keller, Mechanical Heat & Cold, Inc.; William W. Rabensdorf; Roy A. Cattanach and William G. Costello, Ryal's, Inc.; Real Refrigeration Service; B. G. Hyatt, Copeland Refrigeration Corp.

C. E. Tolton and C. H. Lewis, R. L. Spitzley Heating Co.; J. Q. Hoffman, Hoffman Tool & Die Co.; Wilfred J. McCloskey; W. J. Gascon; Charles Landrith, Superior Refrigeration; Frank R. Schuster, Schuster's Refrigeration Service; Snyder Electric Service, R. J. Snyder; George C. Murphree, Universal Cooler Corp.; H. J. Simmons and A. J. Sporer, Simmons & Sporer Co.; R. Tudhope; S. J. McCarthy, Westinghouse Electric Supply Co.; Bernard Hiller, B. Hiller Electric Co.; S. Kornblum; Everett Hammell, Century Refrigeration Service.

L. R. Burns, Burns Refrigeration Service; G. Lindsay, Ace Refrigeration Service; Harry Kaufman and Morris Kaufman, Household Refrigeration Service; Chris Milazzo, Automatic Refrigeration Service; Theo. L. Beguhn, Beguhn Electrical Contractors; Howard P. Rash, Electric Service Co.; M. J. Kaercher and Joseph L. Reisler, All-Electric Service; C. E. Judd, Wagner Electric Co.

Clark Stevens, Stevens Refrigeration Sales; Al J. Parent, Servel Authorized Service; Harry Neberlee, Neberlee Ice Machine Co.; L. Young, Young Supply Co.; Arthur R. Avey, Avey & Riley; C. Lamb, Reliable Electric Refrigeration Service; Norman Johnson; L. A. Baird; George Kunkel; A. J. Laithwaite.

Officials of Detroit Refrigeration Contractors, Inc., are: J. E. Perry, president; E. Johnson, vice-pres.; Geo. Racklyeft, secy.; and Wm. G. Euth, treas. Directors: B. A. Barnes, J. Lindsay, J. E. Perry, J. A. O'Kane, J. J. Grant. B. A. Barnes is chairman of the program committee.

Cutler-Hammer to Open Baltimore Branch

BALTIMORE—To extend its distributing and servicing activities in the states of Maryland and Virginia, Cutler-Hammer, Inc., manufacturer of control equipment, will open a new branch office at 10 W. Chase St. here, company officials announced recently.

R. A. Haworth will head the new office.

Letters from Service Men

Majestic Hermetic Unit

A. Wohlmuther
Electrical Construction
5 Walker Ave., Pikesville, Md.
April 9, 1936

Gentlemen:

Enclosed find 35c for the one extra copy of the Specifications issue and one copy of the NEWS for August 16, 1933, containing information on the Majestic Hermetic unit.

We will appreciate being on your catalog mailing list.

A. WOHLMUTHER

Find It Important

J. Watson & Son
912 First Ave.
Opelika, Alabama
April 10, 1936.

Inclosed you will find our check for $3.00 for which please send us at once one your MASTER SERVICE MANUALS.

We now subscribe to the NEWS and find it so important in our business that we could not get along without it.

We are a dealer in refrigerators and would like to be put on the Catalog Mailing List.

J. H. WATSON.

Honest Editorial

Please send my NEWS to the above address instead of 2649 S. Marshall St.

I am happy to be a subscriber to a magazine that can print an honest editorial, free of any business responsibilities, that appeared in the March 25 edition.

Please add my name to your Catalog Mailing List.—Harry Zimmerman, 2644 So. 8th St., Philadelphia, Pa.

Watching Air Conditioning

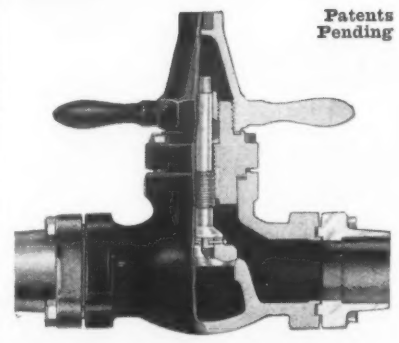
Enclosed is the card recently sent me and it contains the necessary quarter for an extra copy of the Annual Household Specifications Issue of REFRIGERATION NEWS to appear later this month.

It will be appreciated if you will place my name on your catalog mailing list. While my interests to date have been mainly concerned with domestic and small commercial installations of refrigeration, air conditioning is being watched and studied.—H. E. Ruggles, 1233 Franklin Ave., Wilkinsburg, Pa.

Go to your JOBBER for these... HENRY PRODUCTS

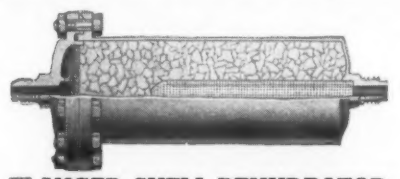
He carries or can obtain the complete line of Henry Dryers, Strainers, Valves and Service Tools. No jobber with your interest at heart will ever substitute.

Patents Pending



WING CAP LINE VALVES
To 6-in. Special Freon Design

Has our patented, rotating, self-aligning, tapered brass stem disc. Resilient Freon packing. Valves can be repacked under pressure. Inverted wing cap operates valve. Tongue and groove, recessed-gasket joint under cap. Available with forged brass companion flanges; or with companion flanges and special adapters for soldering to copper pipe or welding to steel tubing; or with screw ends, or with inserted Streamline fittings.



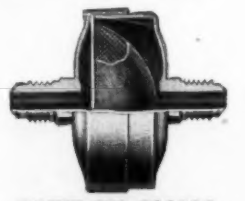
FLANGED SHELL DEHYDRATOR
With Dispersion Tube

Copper-plated steel flange construction for convenience in refilling. Distortion-proof flange makes tongue and groove, recessed-gasket joint. Shell diameters: 2" and 2½". Dehydrant capacity: 13.5 cu. in. to 103 cu. in.

For Copper Pipe

TYPE 895 "Y" STRAINER

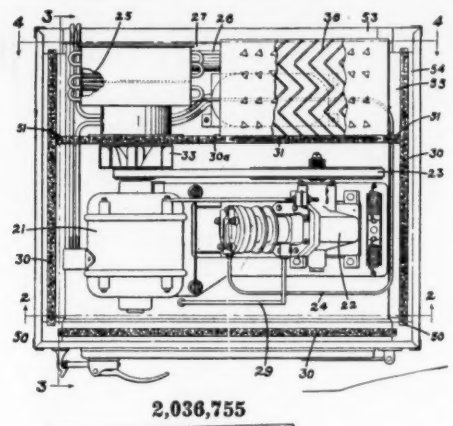
An exceptional design. Negligible pressure drop. Easily removable screen. Large screen area. Light weight. Baffle prevents injury to screen. 80 mesh screen for liquid line. 50 mesh for suction line.



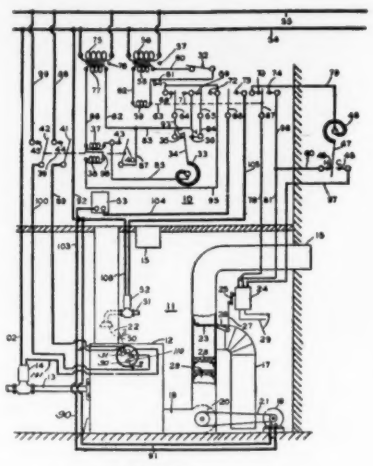
TYPE 890 SMALL STRAINER

Hemispherical screen—50% more area. Soldered copper shell, reinforced screen.

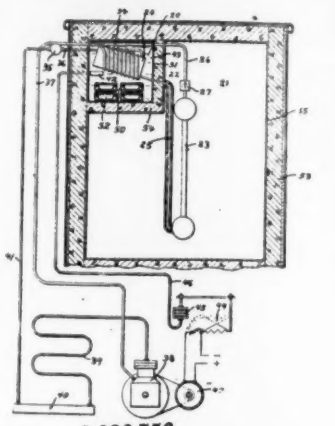
HENRY VALVE CO.
HENRY VALVE COMPANY
1005-17 N. Spaulding Ave., CHICAGO, ILL.
THE MOST COMPLETE LINE IN THE INDUSTRY



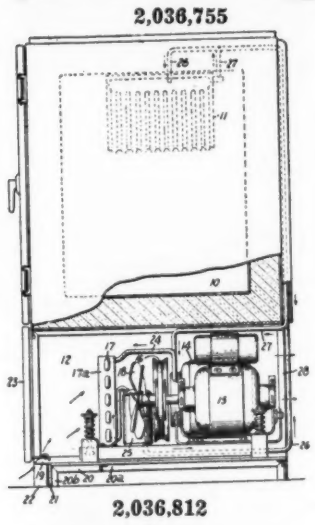
2,036,755



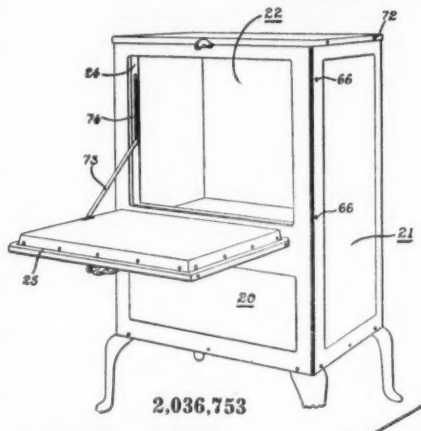
2,036,868



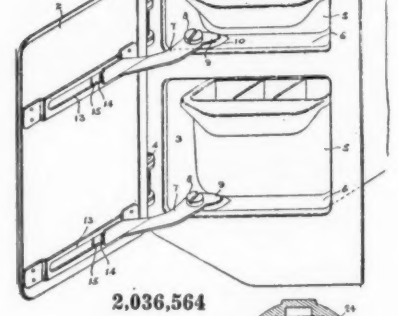
2,036,756



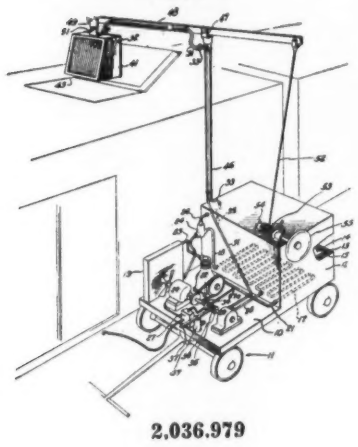
2,036,812



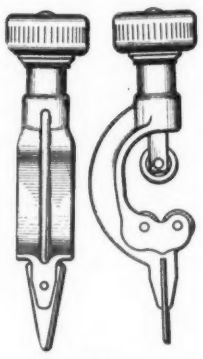
2,036,753



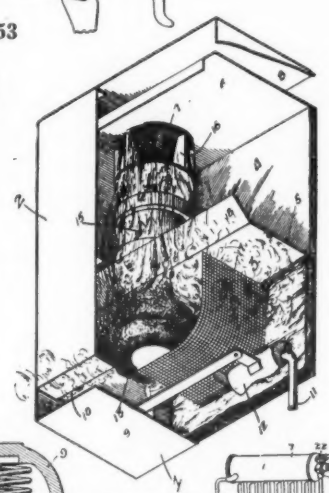
2,036,564



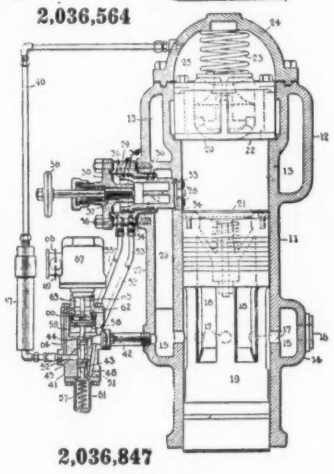
2,036.979



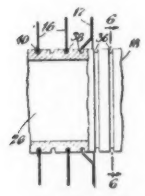
99,190



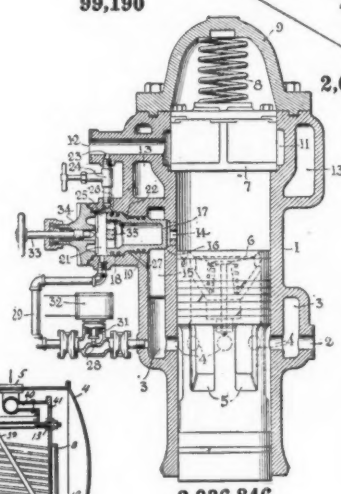
2,036,929



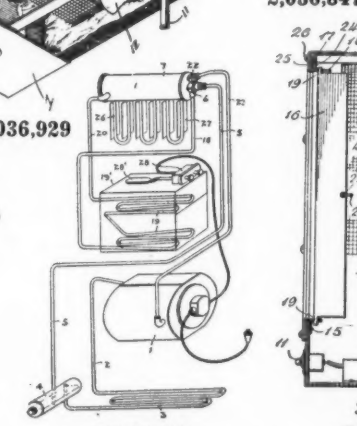
2,036,847



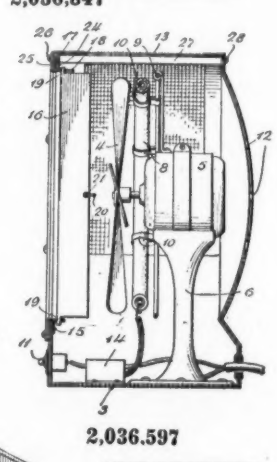
2,036,417



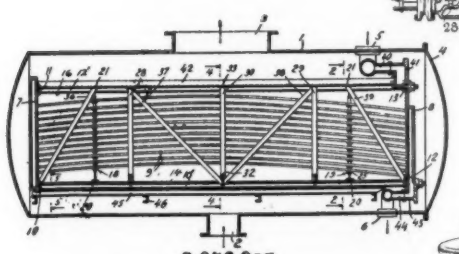
2,036,846



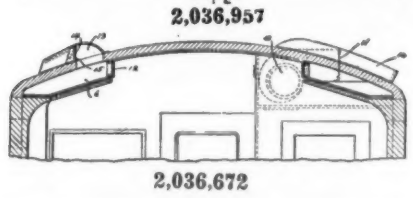
2,036,565



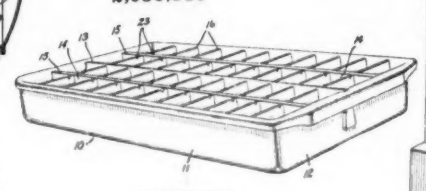
2,036.597



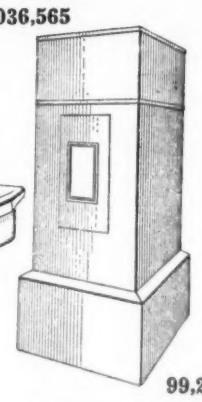
2,036,957



2,036,672



2,036,784



99,242

Patents

Issued April 7, 1936

2,036,417. METHOD OF MAKING FIN RADIATORS. Wilbur G. Laird, Pleasantville, N. Y. Application December 8, 1932, Serial No. 646,259. 9 Claims. (Cl. 29—157.3.)

2,036,564. TRAY RELEASE MECHANISM FOR REFRIGERATOR FREEZING UNITS. Willam H. D. Brouse, Toronto, Ontario, Canada. Application September 21, 1933, Serial No. 690,438. 6 Claims. (Cl. 62—108.5.)

2,036,565. REFRIGERATION DEVICE. William H. D. Brouse, Toronto, Ontario, Canada. Application October 16, 1933, Serial No. 693,752. In Canada Aug. 29, 1933. 7 Claims. (Cl. 62—4.)

2,036,597. COMBINED FAN AND HEATER. Emanuel Meyrowitz, Brooklyn, N. Y. Application September 5, 1935, Serial No. 39,219. 3 Claims. (Cl. 219—39.)

2,036,672. AIR CONDITIONING SYSTEM. Samuel M. Anderson, Sharon, Mass., assignor to B. F. Sturtevant Company, Inc., Boston, Mass. Application April 17, 1935, Serial No. 16,774. 2 Claims. (Cl. 98—20.)

2,036,753. REFRIGERATING APPARATUS. George F. Hofferberth, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corporation, a corporation of Delaware. Application January 31, 1928, Serial No. 250,925. 7 Claims. (Cl. 220—9.)

2,036,755. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corporation, a corporation of Delaware. Application July 14, 1928, Serial No. 292,665. 7 Claims. (Cl. 62—116.)

2,036,756. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corporation, a corporation of Delaware. Application May 28, 1930, Serial No. 456,683. 11 Claims. (Cl. 62—116.)

2,036,784. FREEZING TRAY. Roman C. Warneke and Frank T. Grothouse, Fort Wayne, Ind., assignor to General Electric Company, a corporation of New York. Application October 26, 1933, Serial No. 695,256. 6 Claims. (Cl. 62—108.5.)

2,036,812. REFRIGERATION MACHINE. Ralph E. King, Fort Wayne, Ind., assignor to General Electric Company, a corporation of New York. Application October 11, 1934, Serial No. 747,879. 3 Claims. (Cl. 62—116.)

2,036,846. COMPRESSOR. Jacob G. Aldinger, York, Pa., assignor to York Ice Machinery Corporation, York Pa., a corporation of Delaware. Application March 14, 1934, Serial No. 715,548. 10 Claims. (Cl. 230—22.)

2,036,847. COMPRESSOR. Jacob G. Aldinger, York, Pa., assignor to York Ice Machinery Corporation, York, Pa., a corporation of Delaware. Application May 29, 1935, Serial No. 24,128. 14 Claims. (Cl. 230—22.)

2,036,868. TEMPERATURE CONTROL SYSTEM. Arthur C. Grant, St. Paul, Minn., assignor to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a corporation of Delaware. Application July 22, 1933, Serial No. 681,728. 28 Claims. (Cl. 236—11.)

2,036,949. AIR HUMIDIFYING DEVICE. James S. Durnell, Wyncote, and John A. Tifft, Merion, Pa., assignors to Merion Sporting Goods Manufacturing Corp., Philadelphia, Pa., a corporation of Pennsylvania. Application August 10, 1934, Serial No. 739,354. 3 Claims. (Cl. 261—92.)

2,036,957. HEAT EXCHANGER. Joseph Price, West New Brighton, N. Y., assignor to The Griscom-Russell Company, New York, N. Y., a corporation of Delaware. Application February 19, 1936, Serial No. 64,631. 11 Claims. (Cl. 257—236.)

2,036,979. REFRIGERATION APPARATUS. Joseph Askin and Joseph D. Lear, Buffalo, N. Y., assignors to Fedders Manufacturing Company, Inc., Buffalo, N. Y. Application July 17, 1934, Serial No. 735,559. 3 Claims. (Cl. 62—141.)

DESIGNS

99,190. DESIGN FOR A TUBE CUTTER. August C. Dobrick, Chicago, Ill., assignor to The Imperial Brass Manufacturing Company, Chicago, Ill. Application December 16, 1935, Serial No. 60,093. Term of patent 14 years.

99,242. DESIGN FOR A CASING FOR AIR CONDITIONING APPARATUS. Robert D. Lambert, Pelham, N. Y., assignor to American Radiator Company, New York, N. Y., a corporation of New Jersey. Application March 5, 1936, Serial No. 61,487. Term of patent 14 years.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. Van Deventer (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Questions from Readers Regarding Service Problems

Importance of Using Correct Lubricant

Editor:

I am a subscriber to your paper and receive great pleasure in reading every issue from cover to cover. I find your different articles on refrigeration not only interesting and timely but also very accurate.

I have been connected with the refrigeration servicing business for a number of years, starting to work for an independent servicing company immediately after graduating from a refrigeration school. Just recently I have entered the servicing business on my own. You can readily see therefore that I am primarily interested in the articles you print on servicing, but by no means do I neglect your other articles because they also contain very accurate facts and some very useful information.

Because of your thoroughness in covering every detail of electric refrigeration I can readily see that you are constantly working for the good of the industry and for its continued advancement. Therefore I think there is one phase of refrigeration that should be brought to your attention which is tending to hamper and retard the growth of refrigeration.

I shall endeavor to give you as much information concerning this phase of servicing as my ability to put my thoughts into words will allow.

This phase of servicing with which I am concerned and feel sure that you will be also is the disregard that a great majority of service men have for the correct type and grade of oil to use with the different refrigerants. During the time I have been connected with the refrigeration industry I have seen but a very few service men that gave any thought as to the proper oil that should be used with a certain refrigerant.

You are more than likely better acquainted with the great harm that can be done by the use of the improper oil than I am. I find that the independent service man is the worst offender due perhaps to the fact that he deals with all the different refrigerants while the factory service man has usually but one refrigerant to deal with. I cannot begin to enumerate the countless compressors, motors, and other pieces of refrigeration equipment that I have seen damaged by this gross neglect.

There is, however, one case which stands out quite clear in my mind where the use of the wrong kind of oil was the cause of a great deal of grief. This particular case was concerned with a 3-ton methyl chloride multiple installation where the service man used a sulphur dioxide oil with a viscosity of 140 at 100° F.

Soon after putting the oil in the system the trouble started and my opinion of the matter was solicited. I promptly stated that it was the oil and immediately was accused of being a refrigeration engineer and that I was wasting my time doing service work. This is merely one case out of a great many that I have witnessed—many just as bad, if not worse than that I have just related.

I feel that you could do a great good for the industry by writing an article on the use of the proper oil and perhaps publish figures on the correct type and grade of oil to be used with different refrigerants.

(Name omitted by request.)

Answer: A manufacturer of refrigerants to whom we referred your question says:

"The best policy for a service man is to use the oils recommended by the manufacturer of the equipment being serviced."

There are some general rules which can be followed in specifying the type of oil which should be used with the various refrigerants. Dr. L. E. Philipp and Dr. B. E. Tiffany of the research department of Kelvinator Corp. made an exhaustive study of the subject of lubricating oils in sulphur dioxide systems and we quote from a part of their report:

"The physical properties usually given in an oil specification such as specific gravity, fire and flash points, ash, color, etc., should be stated, but are useful only in indicating the type of oil which passes the other and more important sections of the specifications.

"The pour or flow point should be carefully considered, as the oil must not solidify in the coldest part of the system, and should not separate wax.

"The specification should indicate the permissible range of solubility. If some solubility of oil in liquid sulphur dioxide is required to insure proper return of oil to the crankcase, probably a colored oil which meets the other requirements will be more satisfactory than a white oil. If the oil is on the high pressure side of the refrigeration system, the lower solubility of the white oils would probably make them more desirable.

"The most important part of the specifications would indicate the stability requirements . . . White oils usually show somewhat greater stability than the light colored oils. However, the authors have had some samples of highly acid treated white oils which have decomposed in less time than the better grades of light colored oils.

. . . "If the solubility of the lubricant in the liquid refrigerant at receiver temperatures is low, or if the compressor pumps a large quantity of lubricant, there will be an accumulation of lubricant in the liquid receiver whenever a low side float valve, expansion valve, or thermostatic expansion valve is used. Obviously, it becomes desirable, therefore, to obtain a lubricant with a high temperature coefficient of solubility in liquid sulphur dioxide."

E. W. McGovern, chief engineer for the R. & H. Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., declares that quite a few oils that have given good results as lubricants in methyl chloride machines conform to the following tests:

Viscosity: 150-330 seconds Saybolt at 100° F.

Moisture Content: Less than 0.01% by weight.

Pour Point: –10° F. or below.

Acidity: Neutral—acid equivalent to not more than 0.01 mg. KOH per gm. oil.

Flash Point: 320°-400° F.

Saponifiable Matter: None.

Sulfur Content: Less than 0.15%.

Data on Electrolux

220 Broadway, New York

Editor:

At the suggestion of my friend, Mr. Simon of the Boro Refrigeration Co., New York City, I am writing to you for the purpose of obtaining from you a copy of the issue of the Refrigeration News describing the operation of the Servel Electrolux.

I enclose herewith 10 cents for remitting the same. Bernard B. Price.

Answer: See below.

Acme Refrigeration Co.
1275 East 105th St., Cleveland, Ohio

Editor:

We would like to obtain a complete manual covering the services on the Electrolux Refrigerator. Will you kindly advise by early mail if you have this manual and the price of same or else, where we could obtain one. Enclosed is addressed envelope for your convenience. A. S. Fishel.

Answer: We have no complete manual covering the Electrolux refrigerator. However, a technical article on the theory and operation of the Electrolux air-cooled refrigerator, written by W. R. Hainsworth, director of the Electrolux Laboratories, was published in the March 29, 1933, issue of Electric Refrigeration News. Back issues of the News are obtainable at a cost of 10 cents per copy.

You may also be interested in the articles we have published on the Ice-O-Lator absorption unit. These appeared in the Sept. 11, 18, and 25, 1935, issues of the News.

These articles on the Ice-O-Lator refrigerator are also published in the Master Service Manual, together with articles on 14 other orphan makes of refrigerators.

INFORMAL TALK NUMBER 47

They Learn How You Want It Done Then They Do It In Our Shops

When you employ an R-A-C-I Trained man for installation and service work, you get a fellow who has spent over 600 hours learning what you want done and how to do it. After he satisfied us that he knew what it was all about, we paid his fare to Chicago. Then we gave him 100 hours of practical experience on actual apparatus under competent instructors.

The result is, you get a man with experience, thoroughly trained for profitable service, under the supervision of industry-appointed engineers—a man whose training has been endorsed by thirty leading manufacturers—a fellow you can bank and build on.

Write for details. No obligation.

The REFRIGERATION & AIR CONDITIONING INSTITUTE
2150 LAWRENCE AVE. • CHICAGO

The Officially Endorsed School

The Buyer's Guide

Special rates apply to this column only. Write Advertising Dept. for full information.

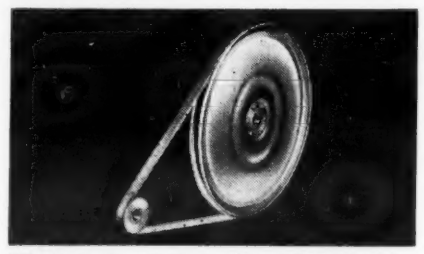
LEADING MAKERS OF REFRIGERATING AND AIR CONDITIONING EQUIPMENT STANDARDIZE ON

Dayton V-BELTS

● Because of their outstanding advantages Dayton V-Belts have been used as original equipment on leading makes of air conditioning equipment, electric refrigerators, washing machines and other appliances for many years.

Dayton V-Belts are the logical choice because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating.

A nearby distributor carries a complete stock of Dayton V-Belts at all times and can quickly supply you.



Whether for Fractional or a Thousand H.P. there is a Dayton V-Belt Drive for the job.

Write us for price list and complete information.

THE DAYTON RUBBER MANUFACTURING CO. • DAYTON, OHIO

World's Largest Manufacturer of V-Belts

GILMER V-Belts

QUIET EFFICIENT LONG-LIVED

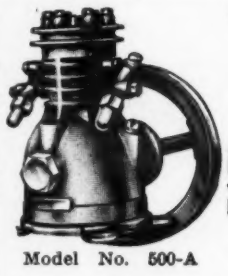
Gilmer BELTS

For electric refrigerators, washers, beer pumps, oil burners, compressors, air-conditioning units, etc. . . . Gilmer has a V-Belt to fit . . . from the largest stock of moulds in the world. Write for V-Belt catalog.

L. H. GILMER COMPANY, TACONY, PHILADELPHIA

"CHIEFTAIN"

QUALITY-BUILT COMPRESSORS and CONDENSING UNITS

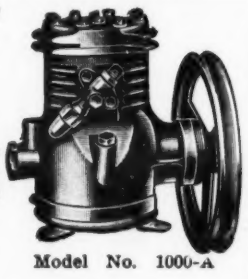


Model No. 500-A

All bearings diamond bored. Positive lubrication of piston by newly developed process plus forced feed lubrication in all models.

Sizes: 1/6, 1/5, 1/4, 1/3 h.p.

Write for prices



Model No. 1000-A

TECUMSEH PRODUCTS CO.

Tecumseh, Mich.

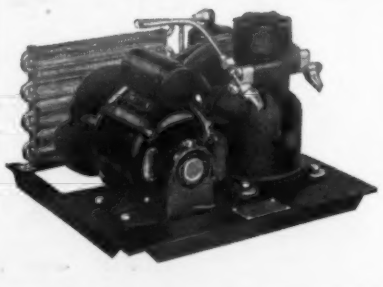
KASON HARDWARE

Serving Refrigerators the World Over

Manufacturers of Fine Refrigerator Hardware

KASON HARDWARE CORP., 127-137 Wallabout St., Brooklyn, N.Y.

CONDENSING UNITS and COMPRESSORS FOR HOUSEHOLD REFRIGERATION BY



JOMOCO, INC.

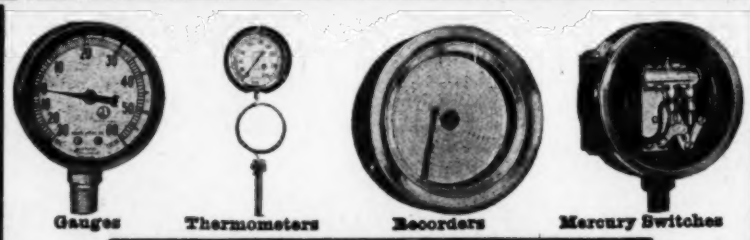
A SUBSIDIARY OF THE

JOHNSON MOTOR CO.

Waukegan, Ill.

CABLE ADDRESS: JOMOCO-WAUKEGAN

Refrigeration Instruments by Marsh



Gauges Thermometers Recorders Mercury Switches

Jas. P. Marsh Corporation

2067 SOUTHPORT AVE., CHICAGO, ILL.

Henry Develops New Dryers, Valves & Strainers

CHICAGO—Henry Valve Co. has introduced a new line of dryers, strainers, large Freon and methyl chloride shut-off valves, and relief valves, for use by refrigeration engineers and service men in installation and replacement work. The equipment is available in a number of types, sizes, and fitting combinations.

The dryers have shells up to 5½ inches in length, made of copper and drawn in dies. Use of dies eliminates one of the end joints on the dryer shell, reducing possibility of leaks. A stamped cap is soldered to the other end of the drawn shell in some types, while others have a tongue-and-groove flanged gasketed joint for convenience in refilling. Dehydrators of various lengths, with dehydrant capacity up to 328 cu. in. and shell diameters up to 4⅛ inches, are also available.

All dryers except the smallest have dispersion tubes, exposing the volume of dehydrant to penetration by the refrigerant, speeding the drying process and increasing efficiency. Dryers may be obtained with the following dehydrants: activated alumina, anhydrous porous calcium chloride, calcium oxide, drierite, and soda lime.

Many Models Available

The new series of strainers are available in a variety of sizes, designs, and capacities. Drawn copper shells, either soldered or flanged at the inlet end, are used in the strainers. For installations where an exceptionally fine degree of filtering is required, strainers with asbestos strainers are available.

A Y-type strainer, one of the most notable of the new assemblies, is said to have a negligible pressure drop, large screen area, accessible cleanout flange, and a baffle to prevent damage to the screen, in addition to being light in weight. Compactness, without sacrifice of screen area, is obtained by use of a hemispherical screen assembly, instead of the usual flat screen disc, in one type of small strainer. This design, it is claimed, results in a 50% greater screen area.

The new line of wing cap shut-off valves for Freon and methyl chloride, have stems of two-piece construction, equipped with a patented rotating self-aligning disc, which is replaceable.

This brass swivel disc is attached to the stem by three steel pins, which enter corresponsing grooves in the stem. Pins are held in place by a spring retaining ring.

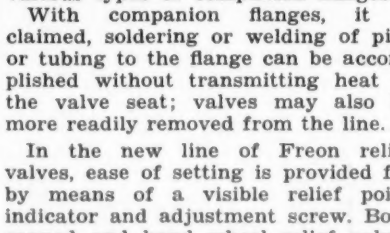
Packing for Freon Used

These are back-seated, and may be packed under pressure. A resilient packing, especially developed for Freon, is used. No special wrenches are needed, the wing cap with socket providing a ready means of operation. The valves are made with screw ends, streamline solder fittings, or with various types of companion flanges.

With companion flanges, it is claimed, soldering or welding of pipe or tubing to the flange can be accomplished without transmitting heat to the valve seat; valves may also be more readily removed from the line.

In the new line of Freon relief valves, ease of setting is provided for by means of a visible relief point indicator and adjustment screw. Both capped and hand wheel relief valves are made, the latter being a combination pressure relief and emergency blow-off valve. Lifting the valve stem, by turning the hand wheel counterclockwise, rapidly discharges the refrigerant. Valves of emergency release type are designed to meet the demands of certain local refrigeration installation ordinances being introduced throughout the country.

M&E EST. 1866 *Compressors for* **MILK COOLING**



RUGGED • RELIABLE

10 year record of successful use. Inquiries are invited from manufacturers and assemblers. Sizes ⅙ to 15 H.P. Catalog on request.

MERCHANT & EVANS CO.

PHILADELPHIA

Jobber Activities

By H. W. Small

A letter which warrants discussion has recently come to my attention. The problems presented by the writer are noteworthy not by their originality but rather by their lack of it.

The portion of the letter I refer to came from one who has comparatively recently entered the field of jobbing refrigeration parts. Sometime previous to the date of the letter he was approached by a manufacturer's salesman and from him purchased a line of belts for refrigeration replacement.

The same letter could have been written about any of a dozen lines but in this particular case, it was belts. It seems that this original stock was later broadened to include many items not ordinarily used in the refrigeration field. What arguments the salesman used to accomplish this the writer did not say. It can be concluded that the arguments were sufficiently persuasive as the jobber now had a complete line of small belts in his stock room.

The jobber now devoted his energy to finding customers to fit his various belt sizes. We gather between the lines that his efforts were not without their reward and that his various sizes began leaving his shelves to commence their labor on some one elses pulley. I gather that the jobber was justly proud of his efforts and that the goose hung high.

The position of the goose was not to be permanent, however, as the writer awoke one morning to find that his belt source had opened a factory branch and warehouse store in his town. It is frankly stated in the letter that to this injury, insult was added by locating this store across the street from the jobber's best belt customer.

I am not going to discuss the merits of this particular case. I feel sympathetic with a friend who was asked at a parents education meeting what he would do if his son went around poking people in the stomach with a stick. He replied that he would do nothing, as he felt that the entire affair was between his son and the owner of the stomach.

As I read the letter it brought back to me a kaleidoscopic view of my own bitter disappointments, sleepless nights, avenging schemes, and finally my impotency to confound my enemies. To the author of this letter I want to say that you cannot conquer your enemy but you can vaccinate yourself against him. When your vaccination has taken sufficiently you should not fear future stings. The vaccine is a mixture of knowledge, understanding, and experience.

By knowledge I mean knowing what to expect, by understanding, why to expect it, by experience, applying knowledge and understanding to the future by comparing it with the past.

A refrigeration jobber will do well to face the factors which confront him and prepare to meet them as he finds them. The factors themselves will change some day but that day will come too late, unless we can successfully operate with them as they now exist.

The jobber is a rather recent addition to the refrigeration industry. Prior to his advent the manufacturers of parts and supplies had distribution on a scale sufficiently large to warrant their apathy toward new sources of distribution. Their distribution was largely through original equipment manufacturers. Some manufacturers distributed articles which could be used in the refrigeration industry through jobbing channels wholly unrelated to refrigeration.

Not so long ago a few firms who saw possibilities in the refrigeration parts business started to broaden their lines to include as many refrigeration items as obtainable. Few manufacturers welcomed their inquiries and only a skeleton line could be obtained. As an outcome, some of the more progressive, manufactured accessories and parts for their own trade.

As they attained some success others started to enter the field, feeling their way as they went.

During this period a group of new manufacturers, or rather manufacturers new to the refrigeration industry, sprang into existence. They found it difficult to compete with those already solidly entrenched in the business. Possible sales were limited to a comparatively few large purchasers. Their costs were necessarily higher than those of the manufacturers then dominating the field. Their natural outlet was the new jobber then just starting to become a factor in the industry.

The replacement business was rapidly falling into the hands of the new aggressive parts manufacturers who recognized, when other outlets were closed to them, the possibilities of jobber distribution. The success the local jobber has had in diverting the business into jobbing channels is well attested by the policies of the parts manufacturer today. His apathy is a thing of the past.

An attempt to recover lost ground and to protect the future has led to an enthusiasm on the part of the manufacturers which must of its own heat consume itself. The pendulum has swung to the jobbers side, but its zenith will soon be attained and the return will eventually be more sound but less enthusiastic.

There is no *new* business of any consequence created by jobbers except the stocking of their own shelves. They may increase the sales of some one manufacturer but they do so at the expense of some other. The manufacturers reply to this is wider, wider, and even "more wider" jobber distribution. Naturally many jobbers find that their toes have been stepped on in the rush.

The virgin jobber feels that the relation he holds to the manufacturer is a combination of sales agent, distributors, and jobber. This is not the case and should any salesman give that impression it would be well to have it clearly in writing over the board of directors signature.

A sales agent is generally understood to be an agent of the company he represents. Ordinarily a territory is set aside and in it he represents his firm and derives his compensation from this territory. He carries no stock and has no investment. Actually he is an employe of the firm. A distributor is usually partially protected within defined limits and carries a stock of merchandise. He is independent and operates as a separate organization. The jobber carries a stock, owns the stock, is seldom protected in any territory, can carry competitive stocks, and must seek his own channel of sales against all competition even against the same article.

A refrigeration jobber is a jobber in every sense of the word and in addition must compete with a system of distribution, which in many lines was nationwide before his advent.

No jobber can logically show cause why an established manufacturer with nationwide distribution should forsake the channels on which his success has previously depended and stake his future on a new and untried vehicle. The best he can hope for is reasonable cooperation until the issues are decided at some future time. No circumstance will prevent the manufacturers from following the path most strewn with gold dollars, unless of course, gold is not then in good repute.

Jobbers must recognize this present condition for what it is, and the manufacturer who unfairly takes advantage of it should reap his reward elsewhere, because only foolish jobbers would help him reach it here. When the storm has cleared away, and when we settle down to normal again, the honest, aggressive, capable jobber will be selling the products of the honest, capable, aggressive manufacturer and the rest will be buried in the sand dunes or washed away into the water of ..... Lake Erie.

* * *

Customary Note

Jobbers still interested in their business should apply to Frank J. Gleason, Executive Secretary, 2707 David Stott Bldg., Detroit, Mich., for any information concerning the National Refrigeration Supply Jobbers Association.

* * *

Open Letter

Dear Irving:

Please send a catalog to Max Policoff, 1723 Hewitt Ave., St. Paul, Minn. He keeps calling me for things I don't have. I cannot spare one of your catalogs as I have but one and need that at my city desk. H. W. Small.

* * *

Handbook Wanted

The industry needs a bigger, better, more complete handbook of engineering data, tables and general information. It now requires six volumes to do the work of one. It may be the editor has this in mind. We hope he reads this anyway.

* * *

File Closed

It did not take long to get information on the efforts of Spike and Irv. to attain perfection. They have now returned to a more normal existence where they can meet their friends on a more common ground.

P. S. Dear Spike: When are you coming to St. Paul?

Note. He was here yesterday and the above is correct. H. S.

* * *

Intercepted Letter

Dear George:

Just a reminder of your promise to bring me a French doll from Paris, for my little girl. Jack Collyer.

P.S.: Size 36.

The Refrigeration Engineer's Manual

By S. L. Potts

Operations on Evaporator & Condenser Described

Chapter 8—Plant Operation (Continued)

To Remove Evaporator for Repairs

Frequently repairs have to be made to the evaporating coils which require that they be removed from the system. Assume that there is a bad leak in a pipe and it has to be replaced.

1. Close the guard or expansion valve tight and pump the gases out of the evaporator. The pressure must not be reduced below atmospheric pressure to prevent the air entering the evaporator and being discharged into condenser. Stop pumping when the suction pressure is slightly above atmospheric. This has removed most of the NH_3 from evaporator and placed it in condenser and receiver. Close suction valve number 1. Break the joints of evaporator and as broken apply wet rags or a small stream of water to the opening to absorb the small amount of ammonia gas left in evaporator. This will prevent it spoiling any food products or being breathed by the men doing the work. Repairs can be made without any further troubles from ammonia gas.

To Replace Evaporator in Operation

After all repairs have been made and the coil cleaned with steam and high pressure air to remove grease, scale, cuttings, etc., make up all joints connecting the evaporator into system. Proceed to test the evaporator by removing all the air contained and producing a vacuum. If the vacuum is held for 24 hours without appreciable loss, the guard or expansion valve may be opened and the refrigerant put to work. All leaks must be found and repaired before charging as explained under the heading "Test for Tight Joints" published in the April 15 instalment.

Valve settings for removing air from evaporator coils for testing are:

No. 1—open	No. 10—open
No. 2—open	No. 11—closed
No. 3—closed	No. 12—closed
No. 4—closed	No. 13—on seat
No. 5—open	No. 14—closed
No. 6—open	No. 15—closed
No. 7—open	No. 16—closed
No. 8—closed	No. 17—closed
No. 9—open or closed	No. 18—closed
	No. 19—closed

To Remove Condenser for Repairs

This operation will be governed somewhat by the type of condenser used. Assuming it to be the submerged type as before and a leak has developed in the coil permitting the ammonia to escape to the cooling water.

1. Close the receiver inlet valve number 6 so that no ammonia can be drawn back into condenser. Lift the check valve 13 from its seat so that we can pump backwards. Set the valves as listed below.

No. 1—closed	No. 11—closed
No. 2—closed	No. 12—closed
No. 3—open	No. 13—off seat
No. 4—open	No. 14—closed
No. 5—closed	No. 15—closed
No. 6—closed	No. 16—closed
No. 7—open	No. 17—closed
No. 8—open	No. 18—closed
No. 9—open	No. 19—closed
No. 10—open	

It is best to drain the water off the condenser to avoid any possible chance of pumping water into the system.

Pump the ammonia out of condenser and store it in the evaporating coils for the time being. Do not pump below atmospheric pressure to prevent air entering the system through leak. Put wet rag or stream of water on joint as it is broken to absorb the NH_3.

2. Break the joint between the condenser and rest of system. Remove the condenser parts to be repaired, replace them with new parts.

3. Clean and dry the condenser as explained before.

4. Connect condenser into system for test.

5. Remove all air in condenser and produce a vacuum in same. To do this set valves as listed.

No. 1—closed	No. 11—closed
No. 2—closed	No. 12—closed
No. 3—open	No. 13—off seat
No. 4—closed	No. 14—closed
No. 5—closed	No. 15—closed
No. 6—closed	No. 16—closed
No. 7—open	No. 17—closed
No. 8—open	No. 18—closed
No. 9—open	No. 19—closed
No. 10—open	

Pump to 25 in. of vacuum and let stand 24 hours to test for leaks. All leaks must be found and repaired. When no leaks exist set the valves as listed below to put NH_3 into condenser and build up head pressure.

No. 1—closed	No. 11—closed
No. 2—open	No. 12—closed
No. 3—closed	No. 13—on seat
No. 4—closed	No. 14—closed
No. 5—open	No. 15—closed
No. 6—closed	No. 16—closed
No. 7—open	No. 17—closed
No. 8—open	No. 18—closed
No. 9—open	No. 19—closed
No. 10—open	

6. Open number 1 slowly and operate compressor drawing the gases from the evaporator and suction line and raising the pressure in the condenser until the pressure there is equal to, or slightly above the pressure in the receiver. Then open valve number 6 and continue operation.

If valve number 6 is opened before the pressure is built up in the condenser, number 6 will act as an expansion valve and may possibly freeze the condenser and cause some further trouble.

To Lay Up Plant

To lay up the plant for a month or more of idleness. There are many ways this may be done. It depends on what repairs and replacements will be done during the time the plant is shut down. If no repairs or changes are to be made, the operation consists of closing the receiver outlet valve number 7 and pumping the evaporating coils down to atmospheric pressure. To pump to a lower pressure might cause air to enter the system. At atmospheric pressure there is no tendency for air to pass in or ammonia to leak out.

Close suction valve number 1, shut down compressor, close discharge valve number 2. Allow the condenser to operate until all the gases have condensed and the liquid ammonia drained into the receiver. Then close the receiver inlet valve number 6. The receiver should be two-thirds to three-quarters full and the pressure on the liquid high enough to prevent any evaporation taking place during the storage period. If the receiver was filled with liquid and sealed tight, a slight temperature rise might cause rupture of the receiver and release all the liquid ammonia causing much damage.

Close all cooling water valves. Drain all water out of condenser and if possible dry it. Drain water jacket in compressor. Drain oil trap at valve number 17 and scale trap at valve number 16. It might be the good policy to cover the motor to protect it from injury and dampness while not in use.

If the receiver is not large enough to contain all the ammonia in the system, then some must be drained off and stored in receivers attached to the system as shown in Fig. 72. These should be filled two-thirds to three-quarters full, the pressure raised to such an amount that evaporation will be prevented and the inlet and outlet valves closed tight, and the cylinder labeled "ammonia." It is good policy to seal the valve closed to prevent any person carelessly opening the valve.

High Pressure Side of System

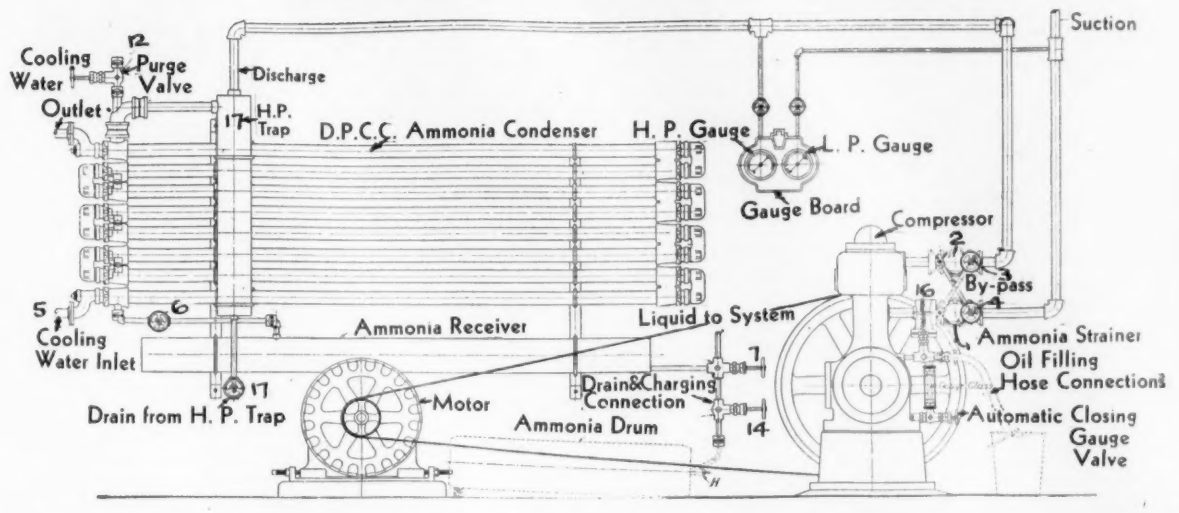


Fig. 72—Layout of the high-pressure side of a refrigerating plant. Valve numbers are some of those referred to in the copy. The complete valve setup was shown with the last instalment (April 15).

To Pull Down Plant For Repairs

If the plant is to be pulled down for overhaul and repairs, the evaporating coils must be emptied as explained above, under "To Lay Up the Plant." The condenser must be emptied as explained above, under "To Remove Condenser for Repairs." The liquid must be stored in tanks under pressure as explained above, under "To Lay Up the Plant." After the overhauling is complete, the plant should be cleaned and dried and connected as explained for a new plant, tested and charged with ammonia as a new plant.

In a carbon dioxide plant, many of the precautions that are necessary for ammonia are unnecessary.

The CO_2 being less costly and not harmful in any way may be allowed to escape into the air. A small amount of moisture in the CO_2 plant does not cause any serious damage or set up any destructive corrosion. It might be cheaper to buy new CO_2 to charge the plant than to store the old supply for the period of idleness, especially if the system has to be emptied to do overhauling work.

Sulphur dioxide (SO_2) plants should be handled with the same precaution given for ammonia.

Purge

It is frequently necessary to purge the system at intervals of time to remove the non-condensible gases that collect in the condenser. When a large part of the condenser is occupied by non-condensible gases, that part is not available for the condensation of the ammonia gas and the capacity is reduced. The reduced condenser capacity available is unable to condense the gases fast enough without a greater difference of temperature between gas and water, so the compressor raises the head pressure to produce this condition. When the head pressure increases without an increase in condensing water temperature the condenser needs purging.

This is done on an NH_3 condenser by placing a hose connection into a pail of water, allowing the gas to escape through valve 12 as long as bubbles of air escape. As soon as the bubbles stop and a sharp pounding noise occurs, close valve 12 and the purge is complete. For SO_2 purge, use lye water in pail; for CO_2, purge to the air.

Continuous Purge

On some large plants, it is advisable to have the purge take place continuously. This is arranged so that all the gas that would be drawn off at purge valve 12 is passed slowly through another condenser of some type. Any ammonia that passes to this purge condenser is trapped off and returned to the main condenser or to the receiver. Only those gases that do not condense are allowed to leak off slowly from this purge condenser. The leak must be adjusted so that non-condensible gases escape but will not permit ammonia to escape.

Defrost the Evaporator Coils

This will depend somewhat on the type of coils and the method used to defrost. In a refrigerator box with the coils hung on the ceiling, shut off the liquid valve and allow the coils to warm up until the frost on coils becomes loose. Then strike the coils a sharp blow with a small piece of pipe just hard enough to break the frost loose from the pipe. It will fall to the floor. It should be swept up and used to cool the fresh water used for ice making or in some other way that is useful.

In order to shorten the time required for the coils to become warmed up to loosen the frost, another method is used. A line is connected direct from the discharge side of the compressor over to the evaporator coil just beyond the expansion valve. Close the expansion valve and allow the hot ammonia gas to circulate through the evaporator coils for a short time until the frost is loose on the pipes. Jar the pipes enough to throw the frost down. As soon as the pipes are clear, shut off the hot gas line and open expansion valve.

To tell when the ammonia liquid is low in the receiver. If the liquid seal on the liquid outlet pipe is broken and gas is passing through the expansion valve, a whistling sound will be heard. Also the line from the tank to the refrigerator will become cold and frost over showing that some small evaporation is taking place before the expansion valve. When the correct amount of liquid is in receiver, the line between receiver and expansion valve should be warm, free from frost, and at a temperature equal to the condenser temperature.

Continuous Purge Condenser

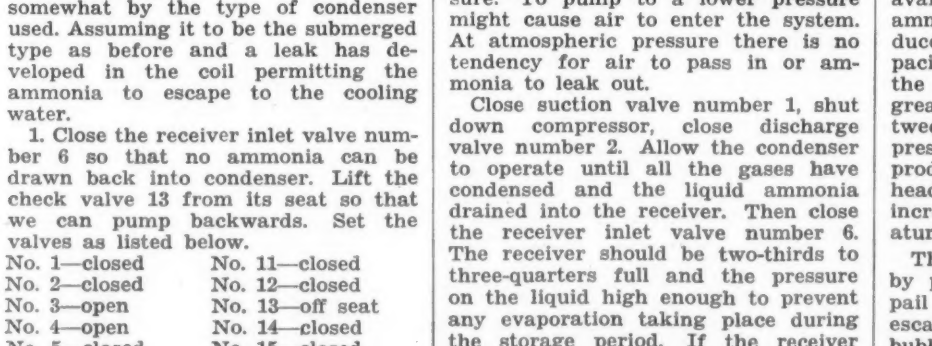
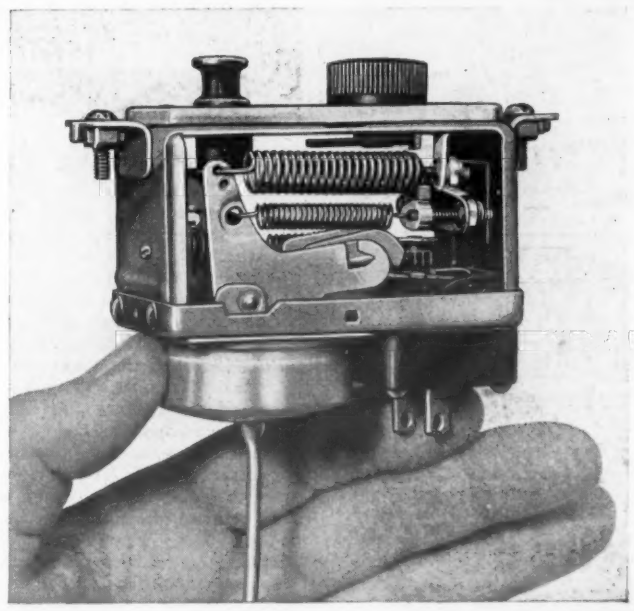


Fig. 73—Setup for continuous purge condenser, necessary on some large plants. Waste gases escape to atmosphere, while ammonia is trapped off and returned to main condenser or receiver.

DU PONT
REG. U. S. PAT. OFF.
Artic
REG. U. S. PAT. OFF.
(DU PONT METHYL CHLORIDE)
THE IDEAL REFRIGERANT
for
DOMESTIC, COMMERCIAL UNITS
A special grade of Methyl Chloride, low in acid and moisture, highly pure. Stocked in standard containers at 51 points in the U. S.
Write for list of authorized distributors; Technical data book and Service Manual. FREE on request.
The R. & H. Chemicals Dept.
E. I. du Pont de Nemours & Co., Inc.
Wilmington, Delaware

TEMPRITE
INSTANTANEOUS
BEER and WATER COOLERS
DETROIT - - - MICHIGAN



RANCO Was the FIRST

—to introduce the use of Stainless Steel Springs in the construction of thermostats for domestic electric refrigerators.

Deterioration is impossible. And the working of the springs in the Rancostat is safely within their limits of elasticity.

Few parts ** strongly built ** carefully machined ** vigilantly inspected. Rancostat maintains ACCURATE temperature settings ** gives thoroughly dependable service ** builds customer satisfaction and good will —because it is a thermostat of FINE CRAFTSMANSHIP as well as SOUND ENGINEERING.

Write for full information. Ask for KR Bulletin.

THE AUTOMATIC RECLOSING CIRCUIT BREAKER CO., Columbus, Ohio

RANCOSTAT